TH Series Touch Screen USER MANUAL

TH465-M	4.3 inch, TFT True Colour Display, 480x272 Pixels, 8MB Memory, 2 RS232/485 Serial Ports, 3 USB Ports
TH765-M	7 inch, TFT True Colour Display, 800x448 Pixels, 128MB Memory, 2 RS232/485 Serial Ports, 3 USB Ports
TH865-M	8 inch, TFT True Colour Display, 800x600 Pixels, 128MB Memory, 2 RS232/485 Serial Ports, 3 USB Ports
THA61-M	10.4 inch, TFT True Colour Display, 640x480 Pixels, 128MB Memory, 2 RS232/485 Serial Ports, 3 USB Ports

Doc Ref: LMAN018_R2V2

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Index

1 Summarize

Xinje new touch screen TH series are based on TP series products. It not only has the language, characters editing, data display, monitor and alarm functions but also has 65536 true color LCD which can bring you brand-new vision enjoyment. It has the advantage of large capability for data duplication and friendly user interface. It provides perfect humanized solution for industrial system, make it easy to control the system.

The function compare between TP and TH:

Series	Function compare								
	Colours	Font setting	3D picture library	Adjust the touch area	Animation	Password	Two ports communicate-on independently	USB data download	USB data duplicate-on
TP	256	√	○	○	√	√	√	○	○
TH	65536	√	√	√	√	√	√	√	√

1-1 Performance and characteristics

1-1-1 Display

- Various models: product size from 4.7'' to 10.4''.
- Rich colours: 65536 TFT true colour, support BMP, JPG format, display more lively.
- Adjust function for touch screen.
- Support multinational language: simple/traditional Chinese, English, Japanese, Korean. Define the font as you like, support underline, italic, bold, shadow and other art words.
- Large picture library, with preloading mode, no delay for screen motion.

1-1-2 Control

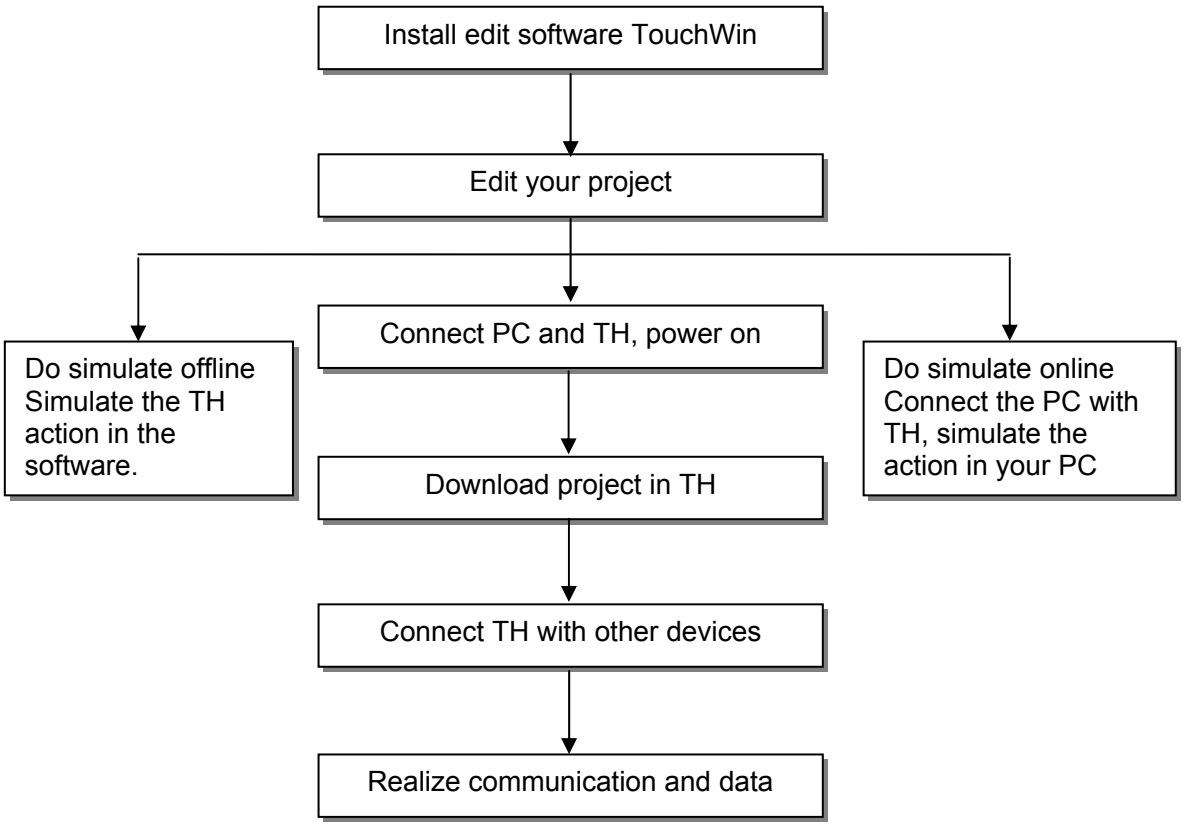
- Switch control, dynamic monitor and display data, bar map, real time trend map, time trend map, XY trend map, discrete/continue column map, real time alarm, history alarm record…
- User-defined data collection and saving function
- Set user's authority, 9 levels password protection
- Simulate online/offline, upload/download data, configuration function
- USB port inside, connect flash disk to realize data duplication function, speed 480Mbps
- Special USB-B port for data download, make the data transfer faster
- User-defined animation track design

1-1-3 Communication

- Two ports communication independently, can connect two different devices at the same time
- Drive the panel printer directly, economical and flexible
- Support free format communication, user edits the driver program

1-2 Work flow

The work flow of using TH:



Note:
Please use TouchWin V2.C and later version to edit your TH project.

2 General specifications

This chapter will introduce the specification of TH series touch screen.
TH series touch screen contains TH465-M, TH765-M, TH856-M and THA61-M.

Series	Types			
TH	TH465-M	TH765-M	TH865-M	THA61-M

2-1 TH465-M

Item		TH465-M
Electrical	Input voltage	DC20-DC28V
	Consumption current	130mA
	Momentary power off allowance	Less than 10ms
	Withstand voltage	AC1000V-10mA 1 minute (signal and time)
	Insulated impedance	DC500V- about 10MΩ (signal and time)
Interface	COM1	Support RS-232/RS-485
	COM2	Support RS-232/RS422/RS485
	USB1	USB-A (accord with USB2.0)
	USB2	USB-A (accord with USB2.0)
	USB3	USB-B (accord with USB2.0)
Environment	Operation temperature	0－50℃
	Reserve temperature	-20-60℃
	Environment temperature	20-85% (no condensation)
	Withstand oscillation	10-25Hz (X, Y, Z each direction 30 minutes 2G)
	Anti-jamming	Voltage noise: 1000Vp-p, pulse 1us, 1 minute
	Surrounding air	No corrosive gas
	Protection construction	IP65
Screen specification	Type	65536 true colours
	Screen size	4.3 inch
	Use life	More than 50000 hours**,** 24 hours running when surrounding temperature is 25 ℃
	Resolution	80*272
	Contrast	Non-adjustable
	Character	Chinese, English, Korean, Japanese…
	Character size	Any size and font
	Touch panel	4-wire resistance mode
Memory	Screen	8MB
Construction	Cooling method	Natural air cooling
	Exterior dimension	150.0*100.0*41.0mm
	Mounting dimension	144.0*94.0mm

2-2 TH765-M

Item		TH765-M
Electrical	Input voltage	DC20-DC28V
	Consumption current	250mA
	Momentary power off allowance	Less than 10ms
	Withstand voltage	AC1000V-10mA 1 minute (signal and time)
	Insulated impedance	DC500V- about 10MΩ (signal and time)
Interface	COM1	Support RS-232/RS-485
	COM2	Support RS-232/RS422/RS485
	USB1	USB-A (accord with USB2.0)
	USB2	USB-A (accord with USB2.0)
	USB3	USB-B (accord with USB2.0)
Environment	Operation temperature	0－50℃
	Reserve temperature	-20-60℃
	Environment temperature	20-85% (no condensation)
	Withstand oscillation	10-25Hz (X, Y, Z each direction 30 minutes 2G)
	Anti-jamming	Voltage noise: 1000Vp-p, pulse 1us, 1 minute
	Surrounding air	No corrosive gas
	Protection construction	IP65
Screen specification	Type	65536 true colors
	Screen size	7 inch
	Use life	More than 50000 hours**,** 24 hours running when surrounding temperature is 25 ℃
	Resolution	800*448
	Contrast	Non-adjustable
	Character	Chinese, English, Korean, Japanese…
	Character size	Any size and font
	Touch panel	4-wire resistance mode
Memory	Screen	128MB
Construction	Cooling method	Natural air cooling
	Exterior dimension	205.0*151.5*48.9mm
	Mounting dimension	192.0*138.5mm

2-3 TH865-M

Item		TH865-M
Electrical	Input voltage	DC20-DC28V
	Consumption current	260mA
	Momentary power off allowance	Less than 10ms
	Withstand voltage	AC1000V-10mA 1 minute (signal and time)
	Insulated impedance	DC500V- about 10MΩ (signal and time)
Interface	COM1	Support RS-232/RS-485
	COM2	Support RS-232/RS422/RS485
	USB1	USB-A (accord with USB2.0)
	USB2	USB-A (accord with USB2.0)
	USB3	USB-B (accord with USB2.0)
Environment	Operation temperature	0－50℃
	Reserve temperature	-20-60℃
	Environment temperature	20-85% (no condensation)
	Withstand oscillation	10-25Hz (X, Y, Z each direction 30 minutes 2G)
	Anti-jamming	Voltage noise: 1000Vp-p, pulse 1us, 1 minute
	Surrounding air	No corrosive gas
	Protection construction	IP65
Screen specification	Type	65536 true colors
	Screen size	8 inch
	Use life	More than 50000 hours**,** 24 hours running when surrounding temperature is 25 ℃
	Resolution	800*600
	Contrast	Non-adjustable
	Character	Chinese, English, Korean, Japanese…
	Character size	Any size and font
	Touch panel	4-wire resistance mode
Memory	Screen	128MB
Construction	Cooling method	Natural air cooling
	Exterior dimension	224.4*170.8*45.5mm
	Mounting dimension	211.4*157.8mm

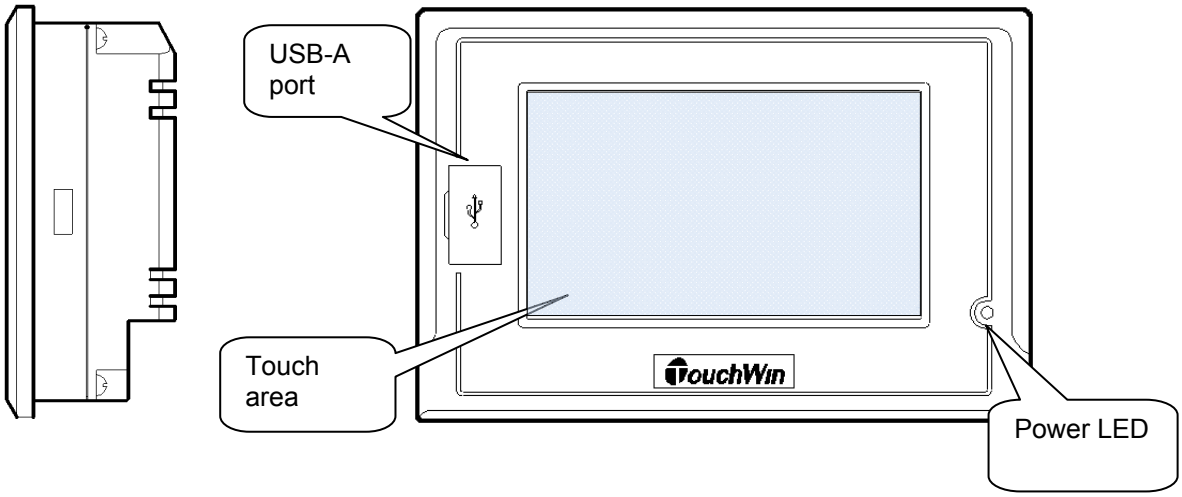
2-4 THA61-M

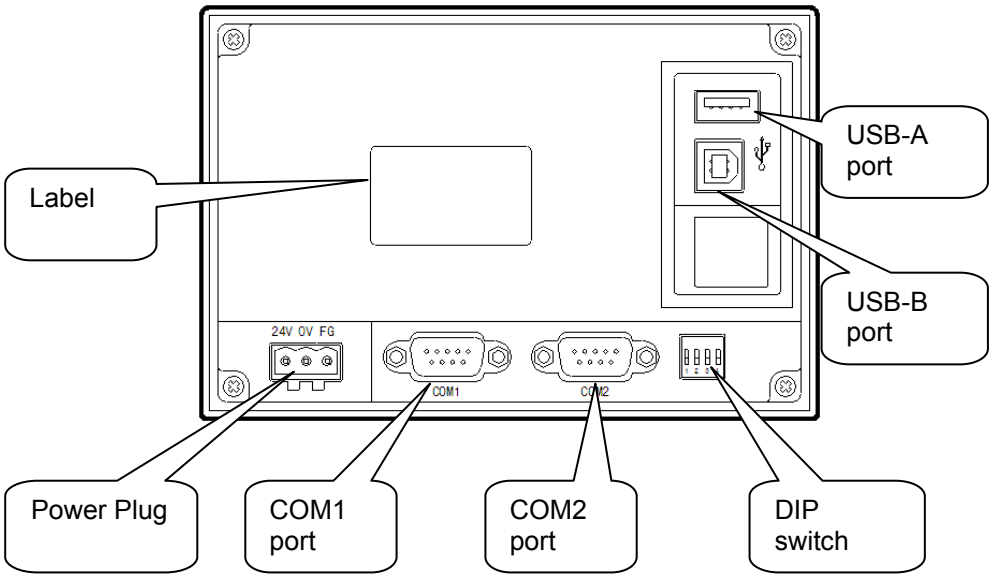
Item		THA61-M
Electrical	Input voltage	DC20-DC28V
	Consumption current	630mA
	Momentary power off allowance	Less than 10ms
	Withstand voltage	AC1000V-10mA 1 minute (signal and time)
	Insulated impedance	DC500V- about 10MΩ (signal and time)
Interface	COM1	Support RS-232/RS-485
	COM2	Support RS-232/RS422/RS485
	USB1	USB-A (accord with USB2.0)
	USB2	USB-A (accord with USB2.0)
	USB3	USB-B (accord with USB2.0)
Environment	Operation temperature	0－50℃
	Reserve temperature	-20-60℃
	Environment temperature	20-85% (no condensation)
	Withstand oscillation	10-25Hz (X, Y, Z each direction 30 minutes 2G)
	Anti-jamming	Voltage noise: 1000Vp-p, pulse 1us, 1 minute
	Surrounding air	No corrosive gas
	Protection construction	IP65
Screen specification	Type	65536 true colors
	Screen size	10.4 inch
	Use life	More than 50000 hours**,** 24 hours running when surrounding temperature is 25 ℃
	Resolution	640*480
	Contrast	Non-adjustable
	Character	Chinese, English, Korean, Japanese…
	Character size	Any size and font
	Touch panel	4-wire resistance mode
Memory	Screen	128MB
Construction	Cooling method	Natural air cooling
	Exterior dimension	311.0*234.0*48.0mm
	Mounting dimension	302.0*225.0mm

3 Hardware

3-1 Hardware structure

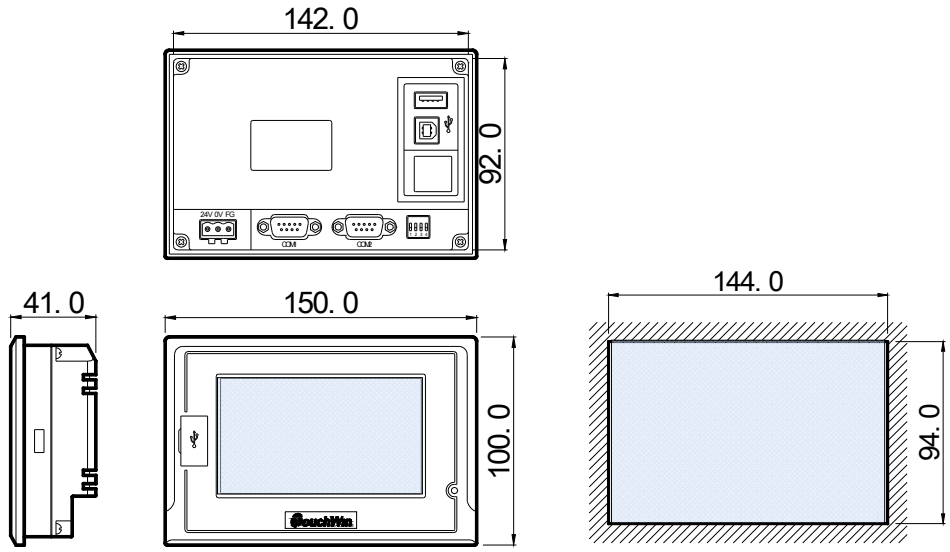
The hardware structure of TH series touch screen includes front and back side. Take TH465-M as an example to explain the structure.



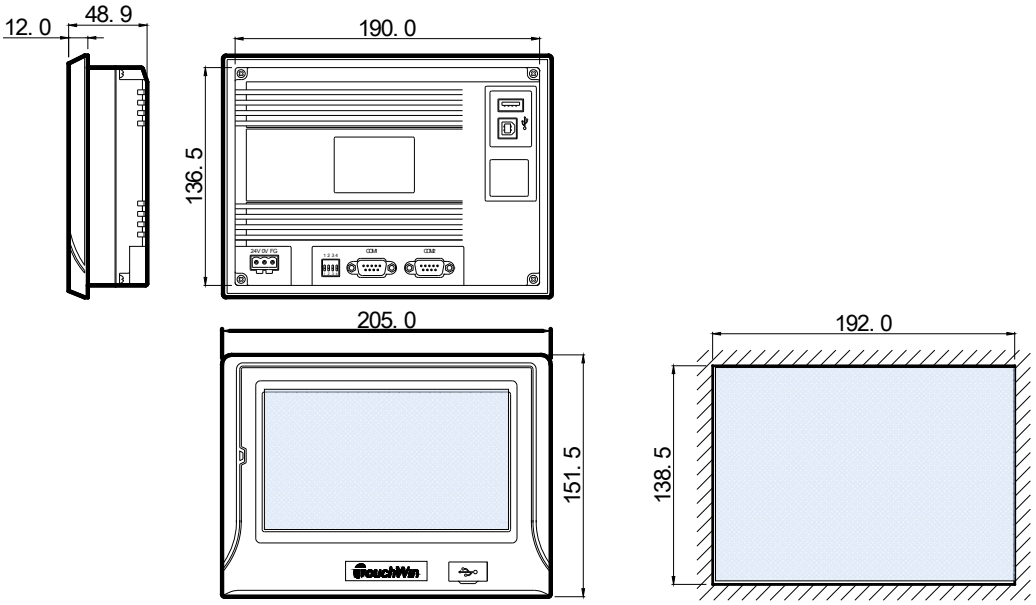


3-2 Dimensions

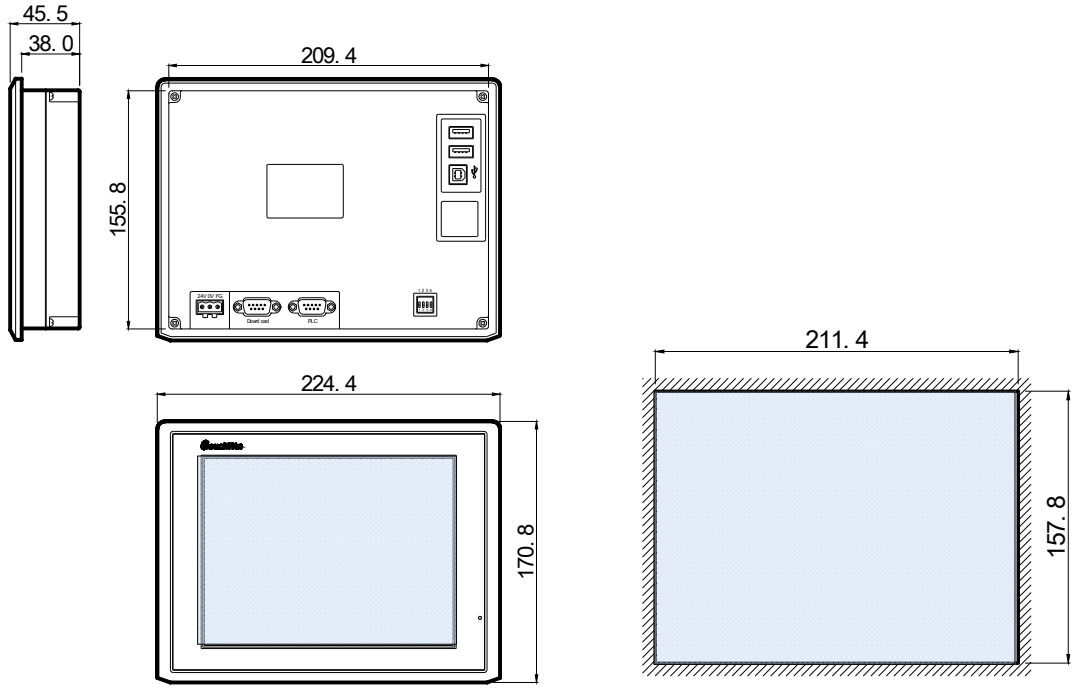
1. TH465-M exterior dimension:150.0mm×100.0mm×41.0mm, mounting dimension: 144.0mm×94.0mm.



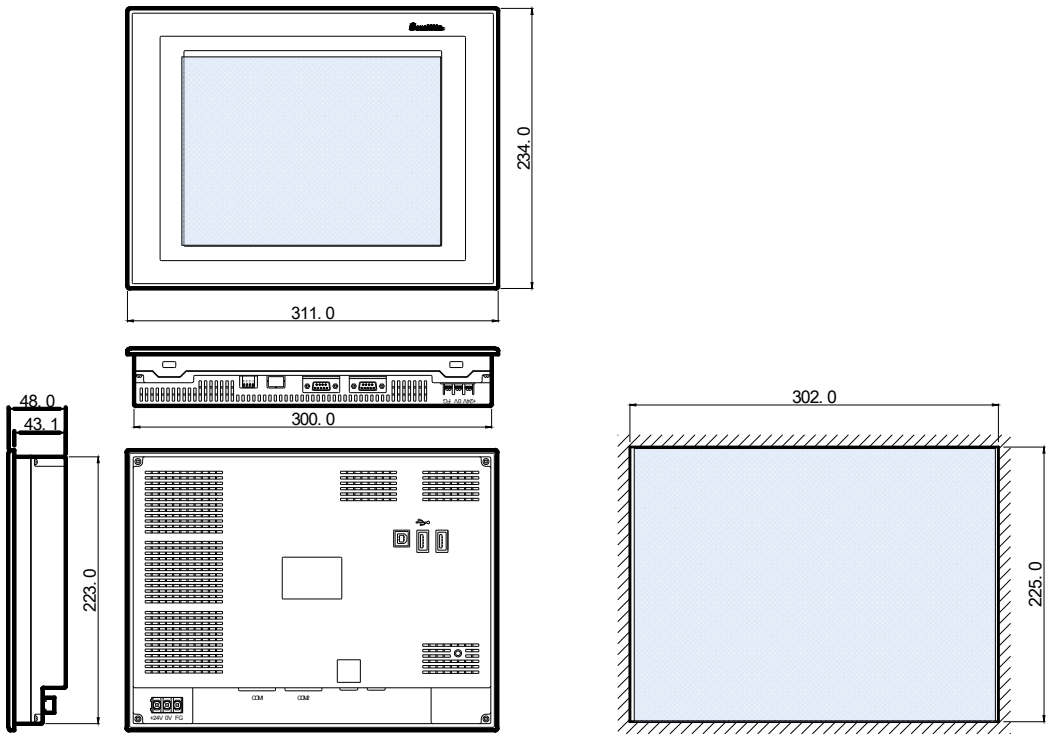
2. TH765-M exterior dimension:205.0mm×151.5mm×48.9mm, mounting dimension: 192.0mm×138.5mm.



3. TH865-M exterior dimension: 224.4mm×170.8mm×45.5mm, mounting dimension: 211.4mm×157.8mm.



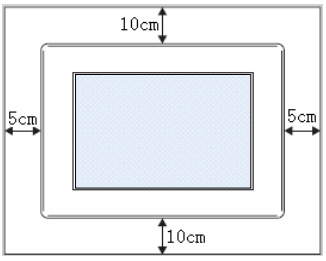
4. THA61-M exterior dimension: 311.0mm×234.0mm×48.0mm, mounting dimension: 302.0mm×225.0mm.

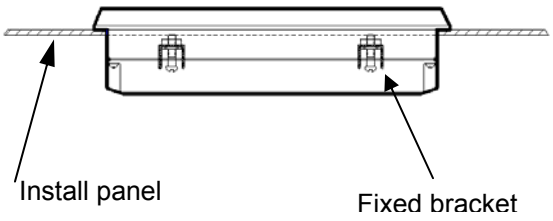


3-3 Installation and using environment

Installation requirements:

1. TH has four ferric mounting racks when out of factory, there are two square holes on the up, down side of TH, use mounting rack to fix the TH with control cabinet.
In order to avoid TH temperature too high after long time working, please keep 10cm space on the up/down and 5cm on the left/right side of the TH when installing.





2. Installation steps:
a) Refer to the dimension in the former chapter to open a rectangle mounting hole in the control cabinet

b) Add airproof circles in the airproof slot when installing
c) Insert the bottom of TH into the mounting hole of control cabinet
d) Insert the install rack into the fix hole of TH then tighten the screw

e) Connect TH and PLC with communication cable

Note:

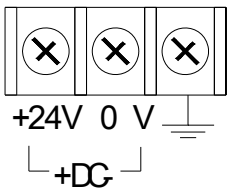
The communication cable can be offered by the supplier or made by user according to the connection map, input +24V DC power to start working

3. Environment

Please use TH series touch screen indoors.
Do not use TH in below environments:
Inflammable gas, steam, dust, fast vary temperature, high humidity (it may cause moisture inside TH).

4. Power supply requirements:

TH series touch screen use DC +24V power supply only. The permitted voltage range is 20V~28V. The connection is as below:



Besides, if connect high voltage or AC power supply with TH, the TH may be damaged and cause electric shock to human body.

Note:
If use the DC +24V output of PLC to drive the TH, make sure the PLC has enough current to drive the TH.

5. Maintenance and cleaning

Maintenance:

Caution

- Please do not open the back cover by yourself.
- Please do not analyse or change TH by yourself
- Please cut off all the power supply while observing the TH.
- Please do not touch terminals after power on, otherwise it may cause electric shock.
- Do not hot plug the cable or pull the cable when communicating, it may destroy the cable.
- Please periodic check installation and screws to avoid falling off.
- Please use TH series touch screen in the certain conditions according to instructions.
- Keep the cleanness of touch area, in order to keep touch sensitivity.

Cleaning

Caution

- Please use clean cloths with little detergent or alcohol to clean the screen.
- Neutral detergent, without acid, alkali is recommended.
- Keep the TH away from thrill or strong corrosive gas
- Never use spray detergent.
- Avoid damage to the screen, please do not touch the screen too hard while wiping.

Disposal

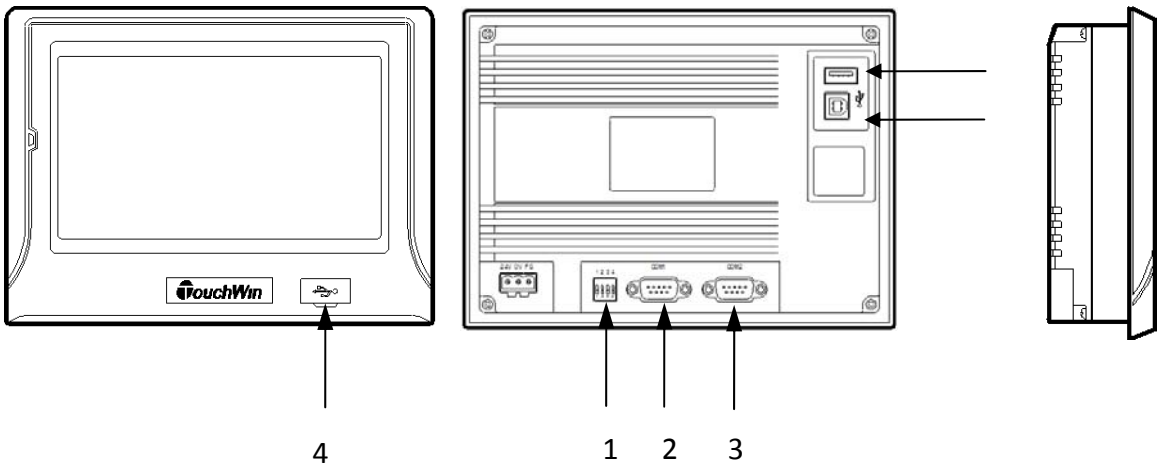
Caution

- Please dispose the TH as industry waste.

4 Interface and switch

4-1 Introduction

TH series touch screen has 1 group of DIP switch and 5 communication ports.



1: DIP switch
2: COM1 port
3:COM2 port
4: USB-A port1
5: USB-A port2
6: USB-B port3

4-2 Dip switch

TH has one group of DIP switch at the back side; they can set the function of COM1 port.

Switch	Switch1	Switch2	Switch3	Switch4	Function
State	ON	OFF	OFF	OFF	Undefined
	OFF	ON	OFF	OFF	Forced download mode of COM1
	OFF	OFF	ON	OFF	Adjust mode of touch area
	OFF	OFF	OFF	ON	Interior check mode (not recommend to use)

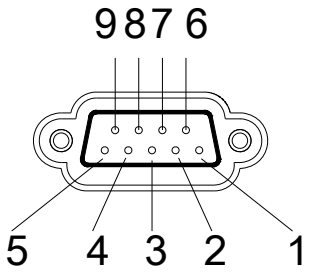
4-3 COM1 port

4-3-1 Download function

TH series touch screen COM1 port has these functions:

- Communication function: connect with PLC, printer, frequency inverter, used as communication port.
- Download function: connect with PC, used to download data and screens.

COM1 port pins definition



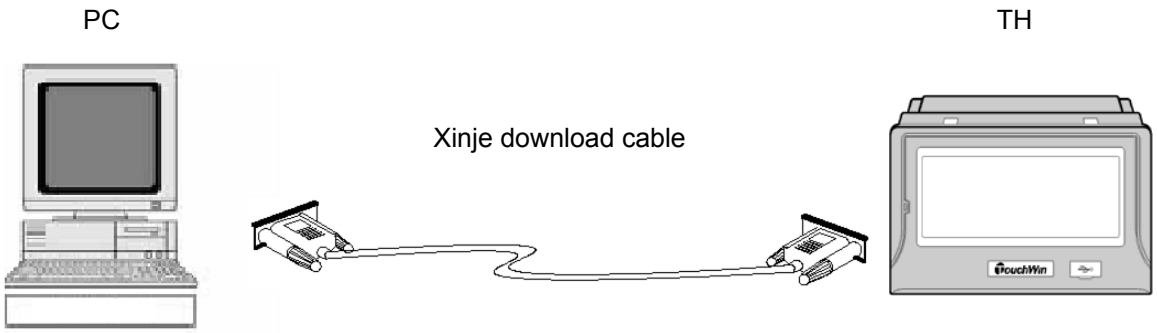
Pin	Name	Meaning
1	NC	Unused terminal
2	RXD	RS232 receive
3	TXD	RS232 send
4	A	RS485 + signal
5	GND	Signal ground
6	NC	Unused terminal
7	B	RS485 – signal
8	NC	Unused terminal
9	NC	Unused terminal

The following terms should be done when using download function:

1. Turn on switch 2 in DIP switch group to make the COM1 in download mode.
2. Please use the cable provided by Xinje company.

Step:

1. Turn on switch2 when TH power supply is cut off
2. Power on TH, connect TH with PC via Xinje download cable to download project
3. After the download process is over, cut off the power of TH, then turn off the switch2
4. Power on the TH again, the project will run normally



Make sure your PC has serial port or USB port (use USB converter tool), connect it with COM1, then click  in the software to download data. The pins definition is shown as below:

PC serial port

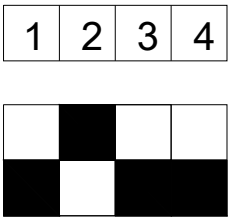
Pin	Name
1	
2	RXD
3	TXD
4	
5	GND
6	
7	RTS
8	
9	

TH COM1 port

Pin	Name
1	NC
2	RXD
3	TXD
4	A
5	GND
6	NC
7	B
8	NC
9	NC

4-3-2 Forced download

After the download is completed. if the TH cannot display the screen normally, you can try *the forced download* mode to update the system.

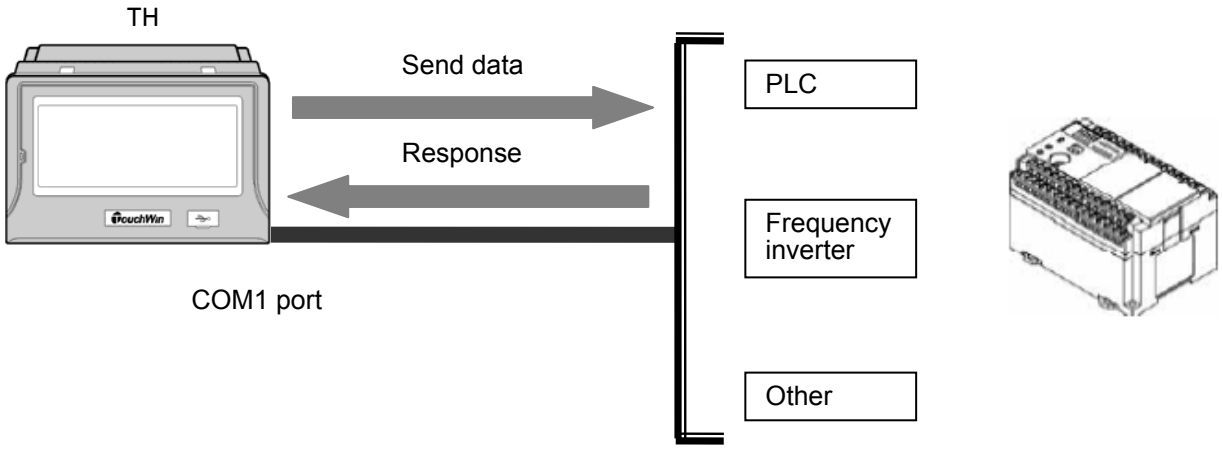


Step:
1. *Cut the power of TH, turn on switch2*
2. *Power on the TH, connect the cable then download the project*
3. *After the download is completed, turn off switch2 then power on the TH again.*

Note:
About the TH download details, please refer to the chapter “build a simple project---project download”.

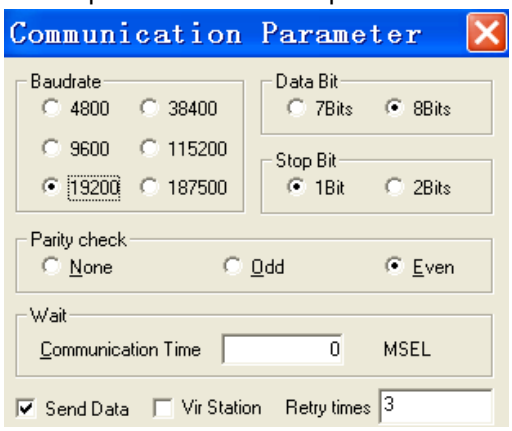
4-3-3 Communication function

COM1 port has strong communication functions. The default mode of COM1 is communication mode.

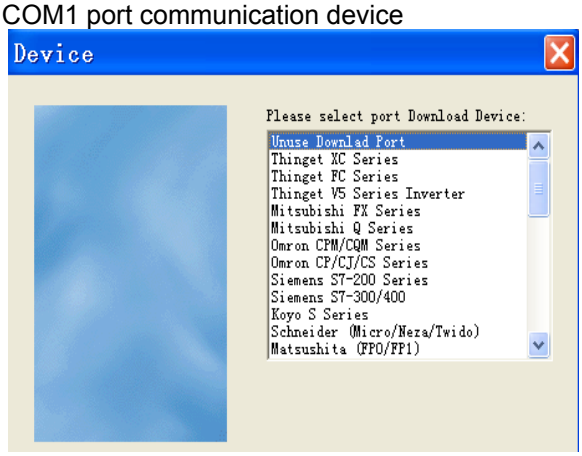


The COM1 default mode is *Communication mode*, you can realize the communication function by setting the correct communication parameters and device

COM1 port communication parameter



COM1 port communication device

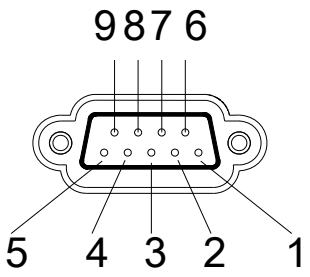


4-4 COM2 port

COM2 port has below functions:

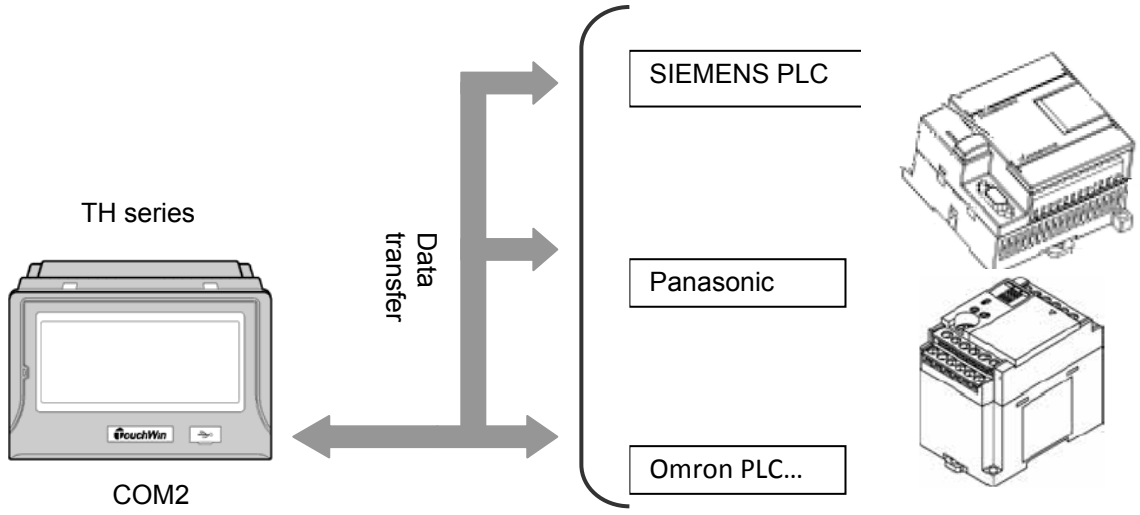
1. Communicate with industry devices, such as PLC, inverter, meters…

COM2 port pins definition



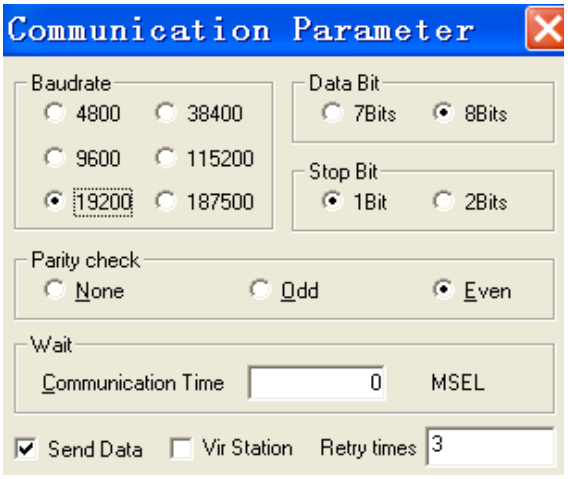
Pins	Name	Meaning
1	TD+	RS422 send +
2	RXD	RS232 receive
3	TXD	RS232 send
4	A	RS485 +
5	GND	Signal ground
6	TD-	RS422 send -
7	B	RS485 -
8	RDD-	RS422 receive -
9	RDD+	RS422 receive +

2. Communicate with PLC



TH can communicates with most mainstream PLC.

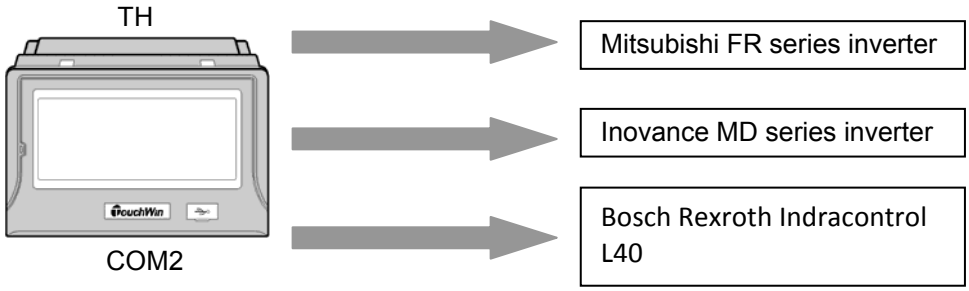
Select the correct PLC type in the list and set the communication parameters:



Note:
Please refer to “TP connect with PLC” for the details of TH communicate with PLC.

3. Communicate with frequency inverter

TH can communicate with various brands of frequency inverters. For the brands which are not in the list, user can select Modbus protocol or user-defined protocol.



Note:
Please refer to “TP series touch screen application examples” for the details of TH communicating with frequency inverter.

4. Communicate with meters
About the communication between TH and meters, users can select user-defined protocol or Modbus protocol.

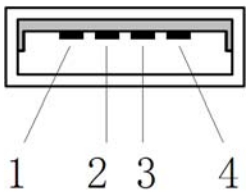
Note:
Please refer to “TP series touch screen application examples” for the details of TH communicating with meters.

4-5 USB-A port

TH has two USB-A ports (accord with USB2.0). The functions are show as below:

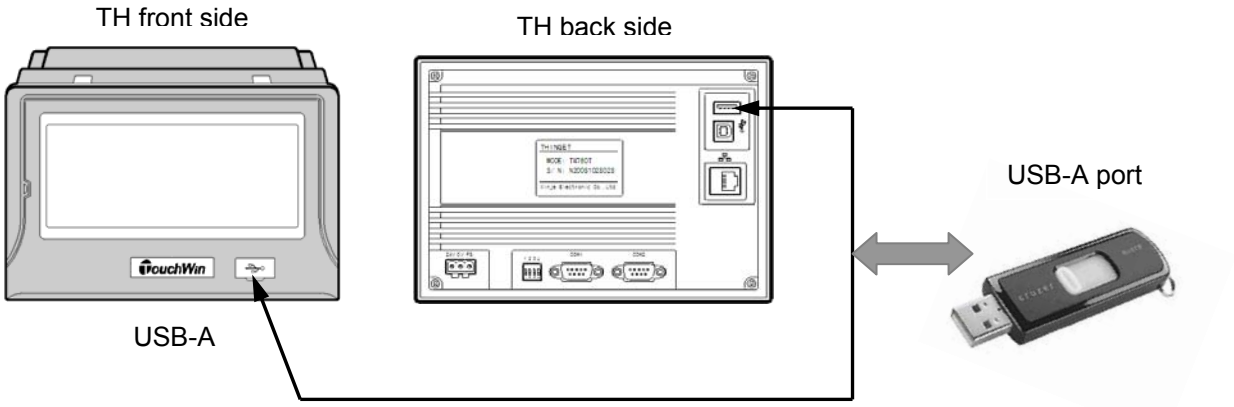
1. Duplicate data, data import and export, transmission speed can be 480Mbps.

USB-A port definition



Pins	Name	Meaning
1	+5V	+5V voltage signal
2	DATA+	Data signal +
3	DATA-	Data signal -
4	-5V	-5V voltage signal

2. Connect U-disk and other USB port devices

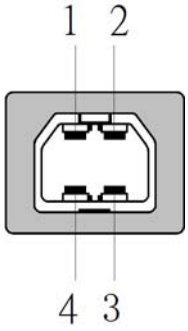


4-6 USB-B port

TH has one USB-B port (accord with USB2.0), located in the back side of TH, the functions are shown as below:

To download the data, the speed can up to 480Mbps.

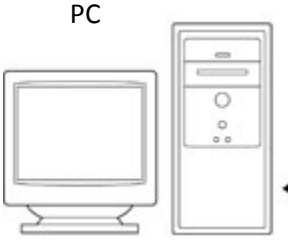
USB-B port definition:



Pins	Name	Meaning
1	+5V	+5V voltage signal
2	DATA+	Data signal +
3	DATA-	Data signal -
4	GND	Ground signal

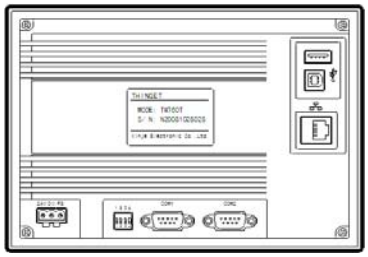
Please use the USB cable sold in the market when connecting PC with USB-B port, then click  in the software to download your project in TH.

PC



USB cable

TH back side



5 Touchwin software

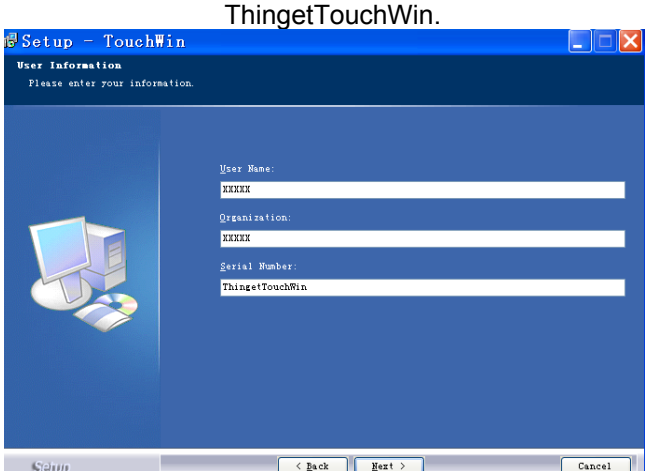
5-1 Title

1. Software version: V2.C and later versions.
2. Software source: visit Xinje website www.xinje.com to obtain the software or get from the products CD.
3. OS requirements: Windows98/2000/XP/ME
4. Install steps:

Open setup.exe

Click “next” until show below window

Enter the information in the space: serial number is ThingetTouchWin.



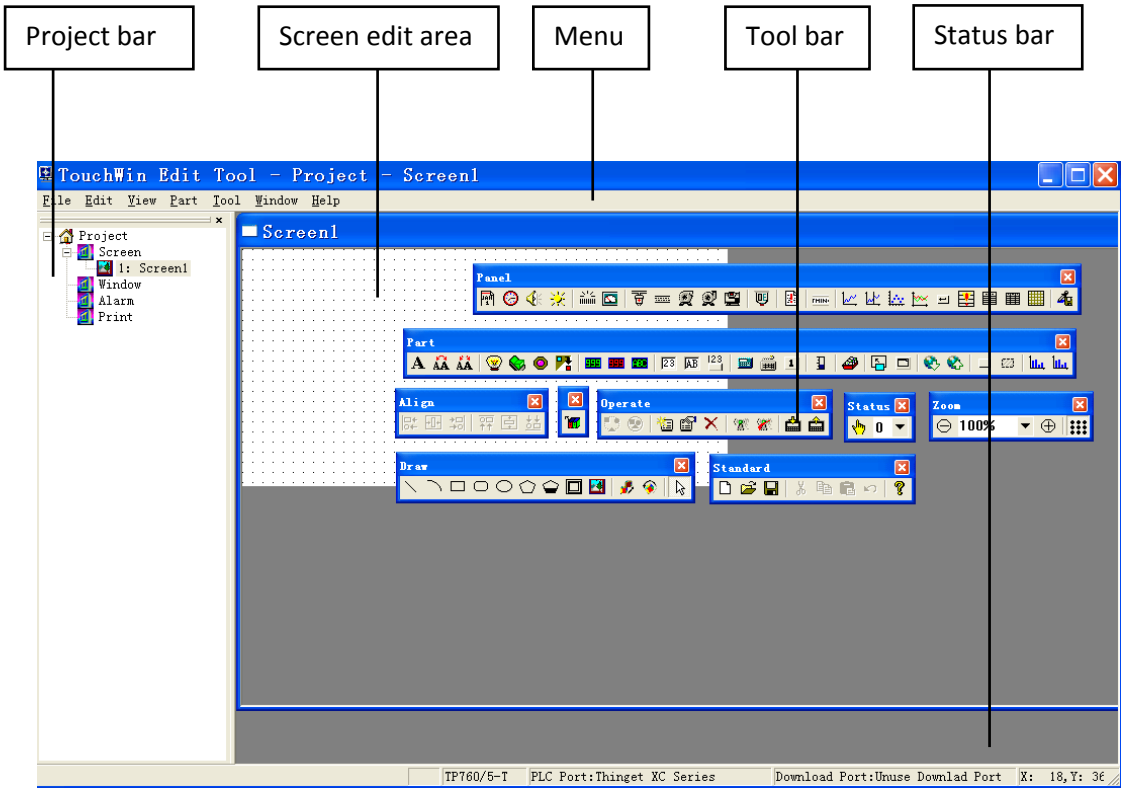
Click “next” to finish your installation.

Click to use the software.

5-2 The construction of Touchwin

5-2-1 Screen

Double click the Touchwin software, build a new project, then you can see the following screen:



- Project bar: build, delete, copy, cut operation of the screen and window
- Screen edit area: make the project in this area
- Menu: it includes file, edit, view, tool, part, window and help.
- Element bar: it includes standard, part, panel, operate, status, zoom, draw and align.
- Status bar: it includes HMI type, PLC port device and download port device.

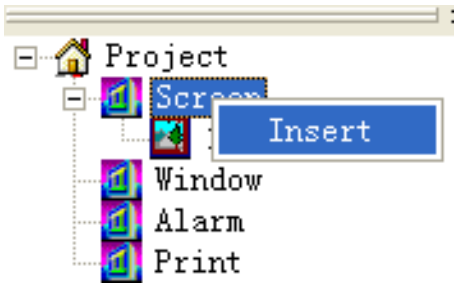
5-2-2 Project bar

Project bar contains the operation of screen and window.

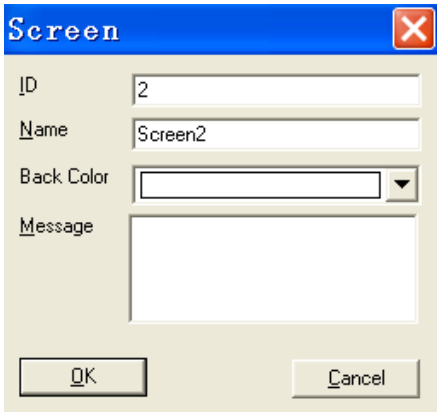
1. Screen operation

- **Build a new screen**

Method 1: click  in the element bar.
Method 2: right click the screen in the project bar, then click insert.



It shows the following window:

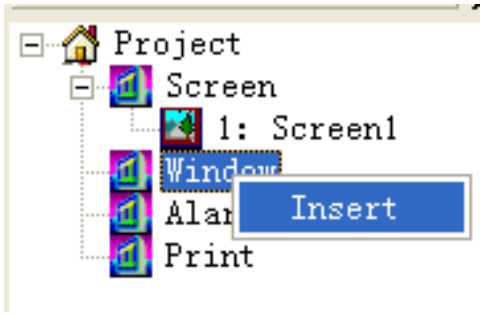


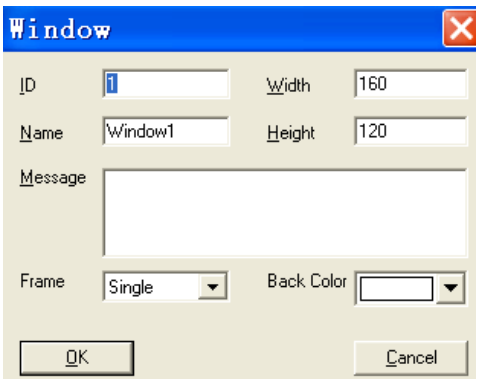
- ID: The number of the screen
- Name: The name of the screen
- Message: The description of the screen
- Click  to modify the screen property.

- **Screen cut, copy and delete**

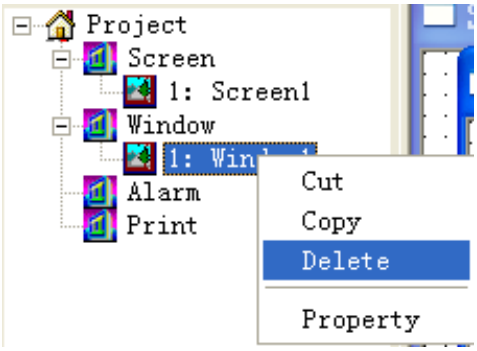
Select the screen in the project bar, right click and choose cut, copy or delete.

Window operation
1. Right-click the window/insert in the project bar. Input the window ID, name and message.
2.



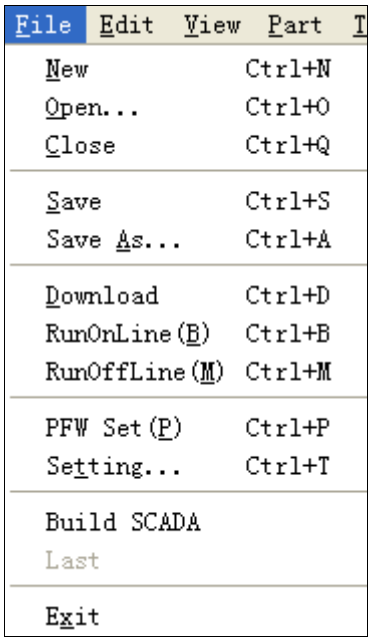


3. window cut, copy, delete
select the window in the project bar, right click to select cut, copy or delete window.



5-2-2-1 File

The file menu is shown as the following:



1. New: Build a new file
2. Open: Open a file
3. Close: Close a file
4. Save: Save a file
5. Save as: Save a file as another name and path

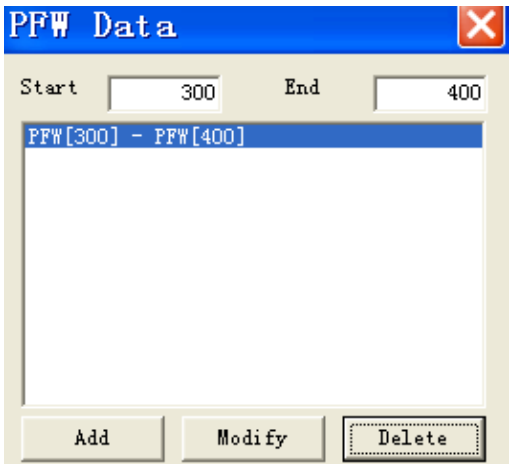
6. Download:  to download project into TH

7. Run-online: Connect PLC and TH, Simulate online  in TH software.

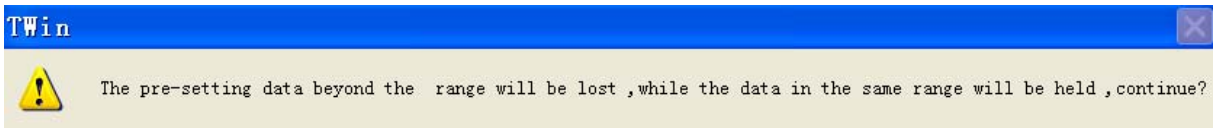
8. Run-offline: Simulate offline  , simulate the touch screen action in the software.

- PFW set:

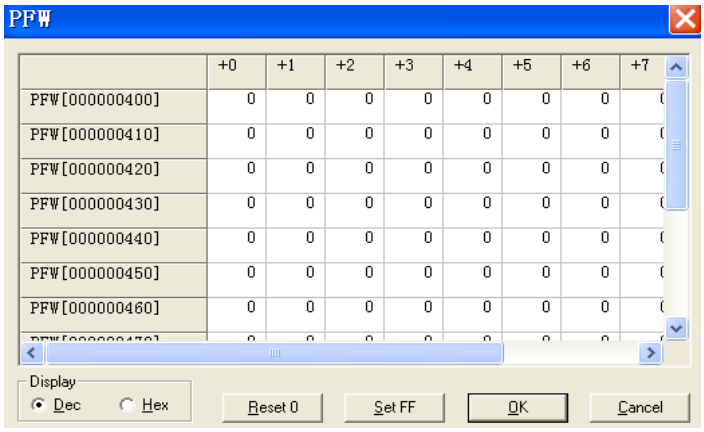
Step1:
Set the PFW register range, click “Add” to add the register in the list.



Change the range then click “Modify”, it will show below message, click ‘Yes” to confirm the modify.



Step2:
Set the value in the range
Double click the PFW range, it will show data setting window:



1. Display number can select decimal or hex.

2. Set FF: set all the data to FFFF.

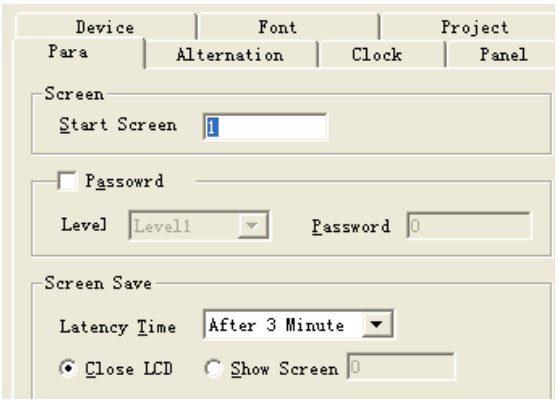
3. Reset 0: set all the data to 0.

Step3:
Download the project into TH.

Note:
PFW0~PFW256 are occupied by the TH system, please select register start from PFW257.

Setting:

- Para tab:



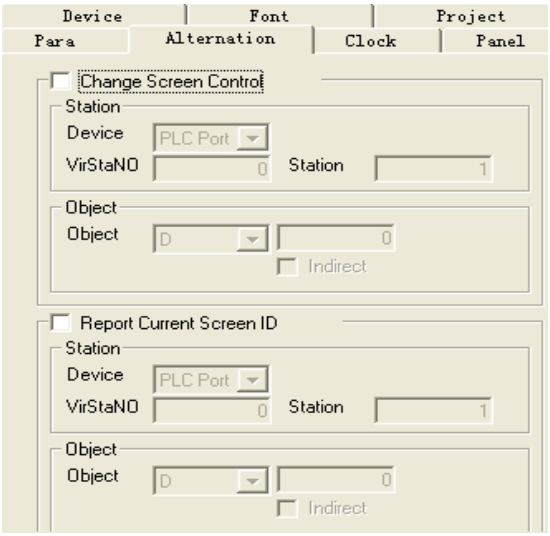
- Screen:

Select the start screen number when TH is power on.
Password: there are 9 levels password, the level 9 password has the highest priority. The higher level password can used to all the elements of lower level password.
The password is used to protect the element or screen, when input the correct password, the button or screen can be used.

- Screen save:

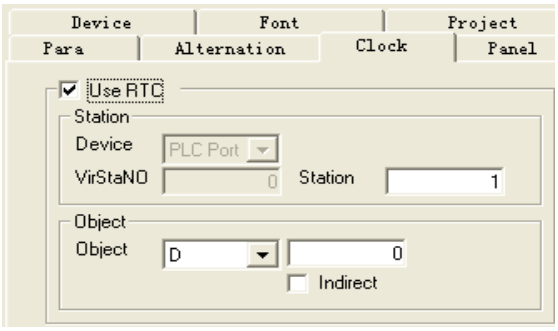
To protect the LCD. After certain time, the background light will be off or jump to certain screen.

- Alternation tab:



1. Change screen control:
2. Change the screen ID according to the value of the register.
3. Report current screen ID:
4. The current screen ID will show in the register.
5. For example, change screen control D0=1, TH displays No.1 screen, report current screen ID D1=1.

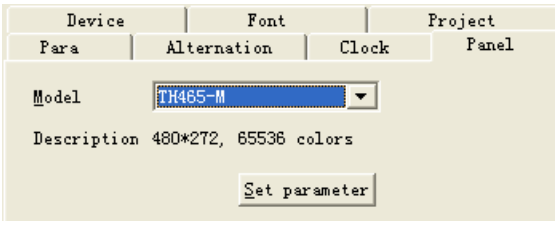
- Clock tab:



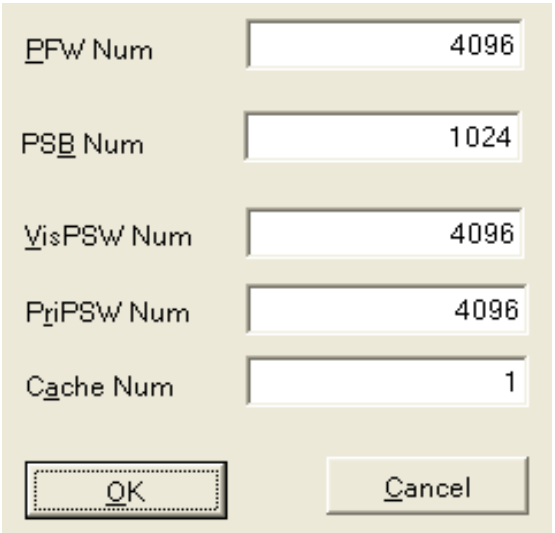
1. Export the current time to the register.
2. For example, object D0, so the real time will save in D0~D5. D0=year, D1=month, D2=day, D3=hour, D4=minute, D5=second.

Please note the export time is hex number.

- Panel tab:

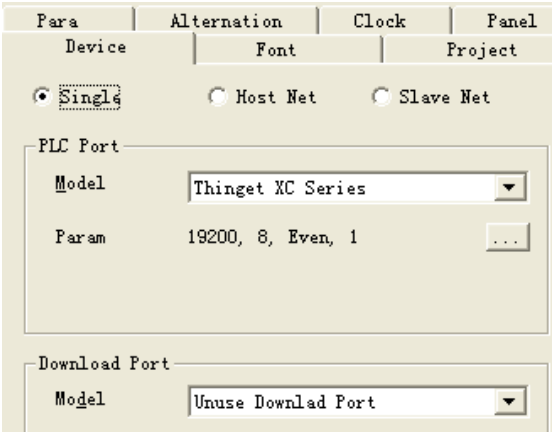


1. The TH type you are using now.
2. Set parameter:
3. Modify the quantity of PFW and PSW registers.



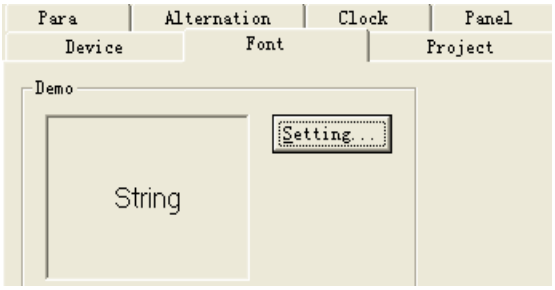
1. Set the PFW register quantity
2. Set the PSB register quantity
3. VisPSW Num: the PSW quantity in data input, data display area.
4. PriPSW Num: the PSW quantity in history trend map, real time trend map area.
5. Cache Num: PFW register quantity

- Device tab:



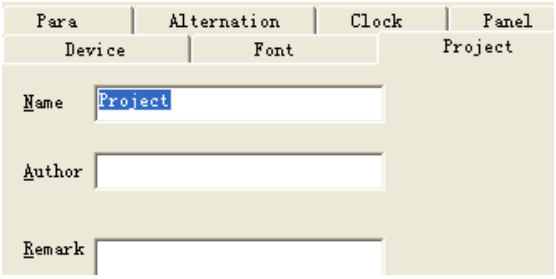
1. Single, host net, slave net: TH communication mode.
2. PLC port: TH PLC port connects device type, change the communication parameters by ...
3. Download port: TH download port connects device type, change the communication parameters by ...

- Font:



Set the font of the letter in the screen.

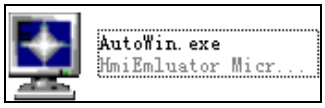
- Project tab:



Record the project name, author and remark.

- Build SCADA

It realizes the SCADA function in windows. Build the SCADA file, and double click it to simulate online.



Note:
Please refer to the chapter " make a project/simulate online ".

- Last

The latest files operated by the user.

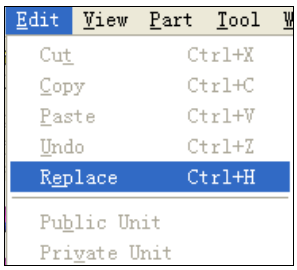
- Exit

Quit the Touchwin software.

5-2-2-2 Edit

1. Cut, copy, paste, undo

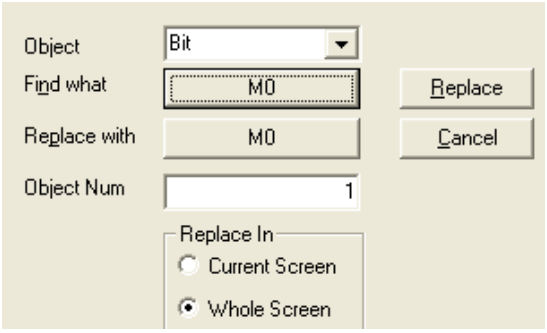
These operations are used to the elements in the screen.



Cut, copy, paste, undo

Public unit, private unit

2. Replace



1. Replace register or coil
2. Find what: the object you want to replace
3. Replace with: the new object
4. Object Num: the quantity you want to replace
5. Replace in: replace the object in current screen or all the screens.

3. Public unit 

Select one element in the screen, click public unit, this element will be added in all the screens.

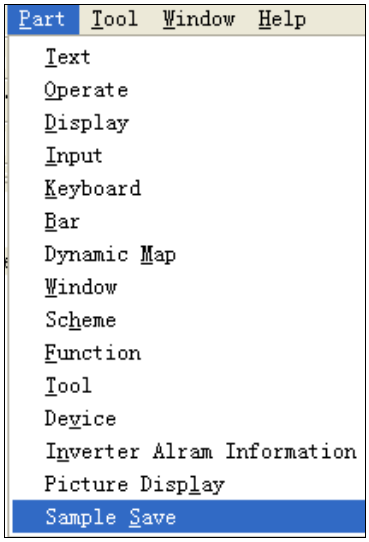
4. Private unit 

After select one element as public unit, click private unit to delete this element in other screens.

5-2-3-3 View

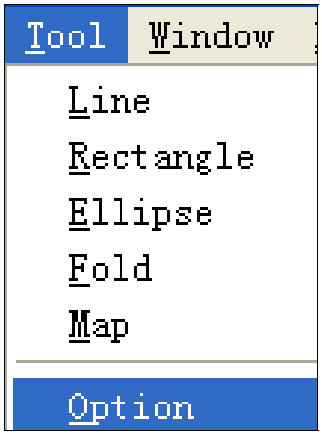
1. Display all the tool bars. Advance and advance2 is grey colour.
2. Only when open the advance function of software, these items can be used.
3. All the items with tick are displayed in the software menu.

5-2-2-4 Part



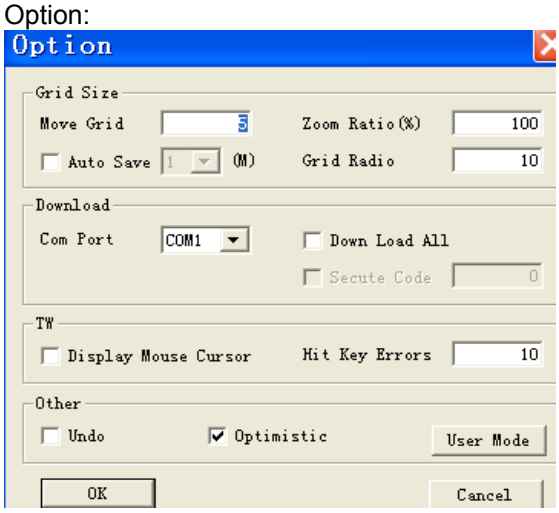
The “part” is used to edit the TH project, it is the same as the tool bar in the software.

5-2-2-5 Tool



Tool menu is the same as the following tool bar.

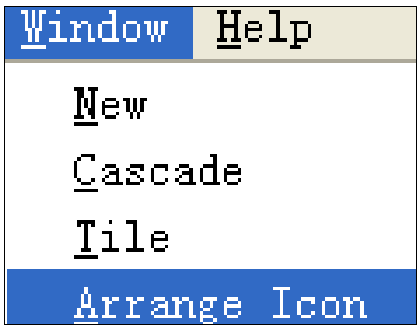
Option:



Grid size:

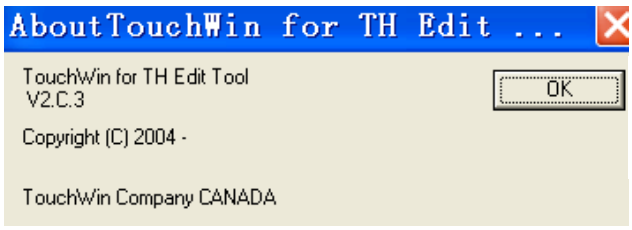
1. Move Grid: set the min pixel when moving the element.
2. Grid radio: the grid density, the smaller the value is, the denser the grid is.
3. Auto save: auto save the project at the time you set.
4. Download: select the project download com port.
5. Download all: when you want to upload the data, please select this item before you download the data into TH.
6. Display mouse cursor: display the mouse connected to TH USB port.

5-2-2-6 Window



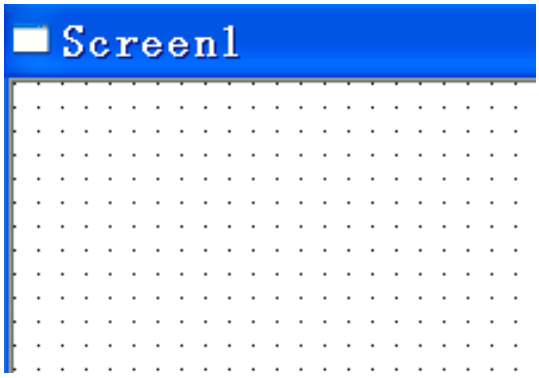
1. New: build a new window
2. Cascade: show all of the window in cascade mode.
3. Tile: show all the window in tiled mode.
4. Arrange icon: arrange all the icons again.

5-2-2-7 Help



Show the Touchwin software version and copyright.

5-2-2-8 Screen



1. Zoom in , zoom out the screen:

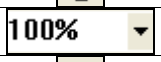
 zoom out,  zoom in

 show the grid in the screen.

5-2-3 Tool bar

Icon	Name	Function
	New	Build a new project
	Open	Open the file
	Save	Save the file
	Cut	Cut the element
	Copy	Copy the element
	Paste	Paste the element
	Undo	Undo the operation
	Help	Check the software version information
	Text	Input static text
	Dynamic text	Display the text according to the value of register, support 16 texts, set register value as 0~15
	Variation text	Display the text according to the value of register, set register value as user need
	Lamp	Display the ON/OFF state of switch
	Button	ON/OFF the bit element
	Lamp button	Combine the function of lamp and button
	Screen jump	Jump to object screen
	Digital display	Display the register value
	Alarm display	Set the upper/lower limit of register value, when exceeding the range, twinkle display
	Text display	Display characters in multi-registers
	Digital input	Input the data in the register
	Text input	Input characters in the register
	Set data	Set data and used in arithmetic
	Digital keyboard	Digital input keyboard
	ASCII keyboard	Character input keyboard
	User input	One input button of keyboard
	Bar	Display the register value in bar picture
	Dynamic map	Display the map according to the register value, support 16 maps, the register value is 0~15
	Call window	Call window according to the value in the coil or register
	Window button	Control the open, close of the window
	Download recipe	Download the recipe into object device
	Upload recipe	Upload the recipe into TH register
	Function button	Realize multi-functions with this button
	Function field	Similar to function button, but the trigger condition is different.
	Discrete column map	Display the data in discrete column map
	Continue column map	Display the data in continue column map
	Line	Draw lines

	Arc	Draw arc
	Rectangle	Draw rectangle
	Ellipse	Draw ellipse
	Fold/polygon	Draw fold and polygon
	Polygon block	Similar to container
	Frame	Draw 3D rectangle
	Map	Add jpg or bmp format pictures
	Move animation	make the movement animation of object
	Rotate animation	Switch the picture
	Material library	The picture library
	Date	Display the date
	Clock	Display the time
	Buzzer	Control the buzzer by the coil
	LCD light control	Control the background light by the coil
	Scale	Display the value in scale
	Instrument	Display the value in the meter
	Valve	Simulate the state of valve
	Pipe	Simulate the liquid state in the pipe
	Pump	Simulate the pump running
	Auto wind	Simulate the auto wind
	Motor	Simulate the motor running
	Retort	Simulate the retort running
	Inverter alarm information	Display the inverter alarm information
	Scroll text	Display the text in scroll mode
	Real time map	Display the current value in curve
	History data map	Display the current and history value in curve
	XY curve	Display two curve in X, Y direction
	XY curve Ex	Display the value in line, point and line-point.
	Time trend control	Display value in certain time space
	Event button	Use with event, curve, realize flip, confirm and clear operation
	Alarm list	Show the inverter alarm information in the list
	Display real time event	Display real time alarm information, when the alarm is free, the event will be deleted automatically
	Display history event	Display many alarm information and event happen time
	Common grid control	Display a group of register in the table
	Data grid control	Display a group of register in the table, support time information table
	Sample save	To collect the object data, no limit for the sample quantity and time, save the data in TH registers
	Sample export	Save the data in TH register and export to object device as CSV format file

	Align left	Align left the objects
	Align centre	Align centre the objects
	Align right	Align right the objects
	Align top	Align top the objects
	Align middle	Align middle the objects
	Align bottom	Align bottom the objects
	Zoom out	Zoom out the screen
	Zoom percent	Zoom percent
	Zoom in	Zoom in the screen
	Grid	Display grid in the screen
	State change	Switch button state display
	Dynamic picture state selection	Switch dynamic picture state display
	Public unit	Use the unit in all the screens
	Private unit	Use the unit in appointed screen
	New	Build a new screen
	Property	Screen name, author, remark…
	Delete	Delete the current screen
	Simulate offline	Simulate the project in the TH
	Simulate online	Connect PLC and TH, simulate the project in TH online
	Download	Download the project in the TH
	Upload	Upload the project from TH to PC
	Debug download	Debug download

6 Create a simple project

In this chapter, make a switch to control the PLC output, in order to explain how to make TH project.

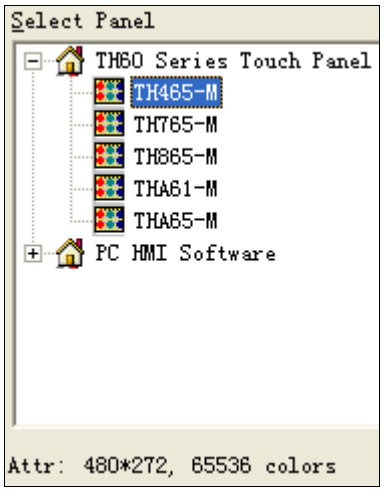
Note:

Please make sure of the TH type and communication device type. It is important for the project download and device communication.

6-1 Build a new Project

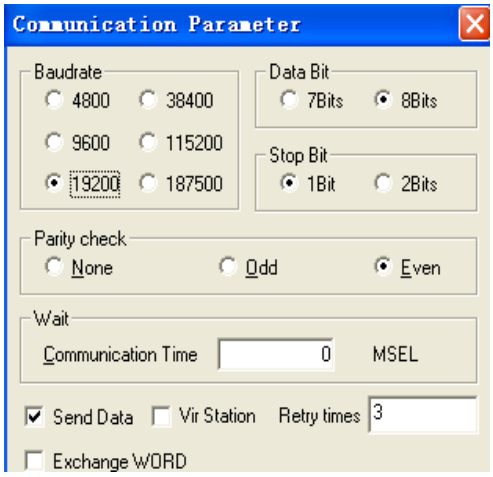
1. Open the Touchwin version 2.C.2 or above software.
2. Click File/New or  to build a new project.
3. Select the correct TH type and com port device type

TH type



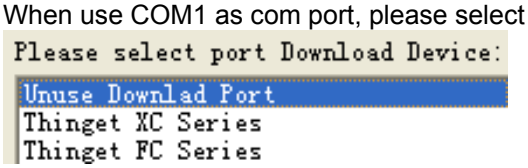
COM port device type

4. Set the com port device communication parameters according to PLC port device

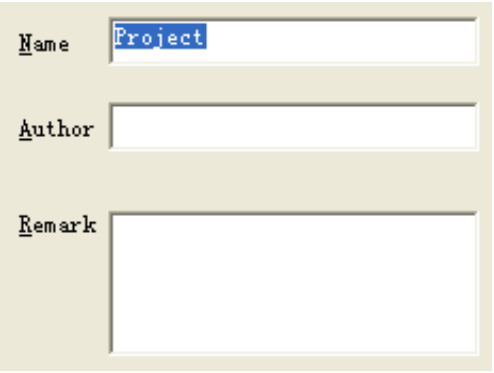


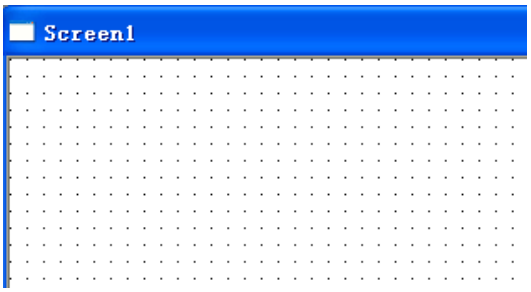
5. When download port (COM1) is not used as communication port, please select unuse download port.

When use COM1 as com port, please select communication device.



6. Finish the building process.

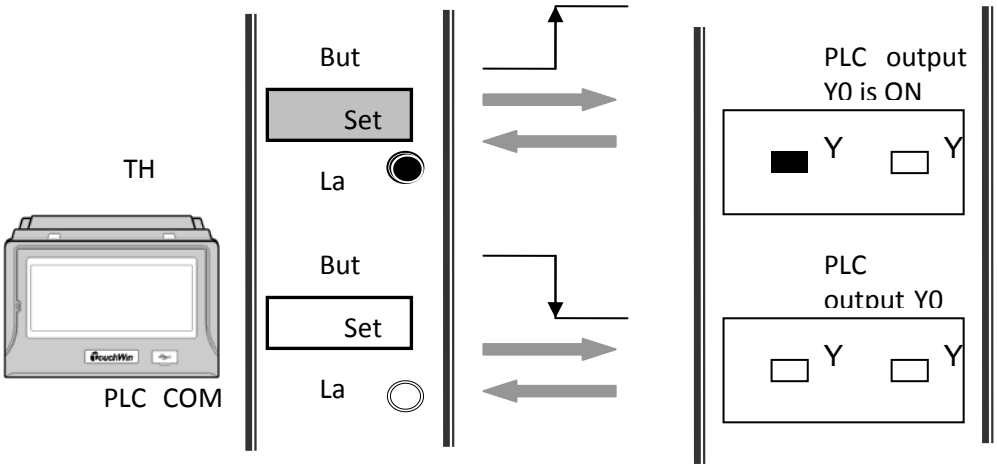




7. Click  to save the project in the PC.

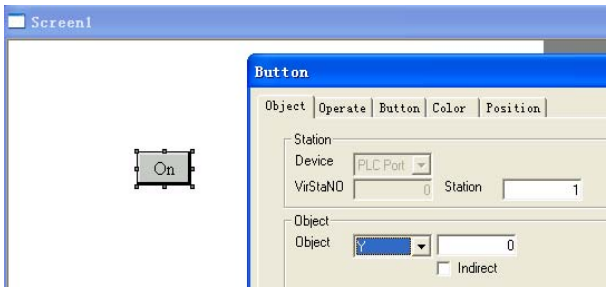
6-2 Make a simple project

Make a button on the screen, to control the Y0 output of Xinje XC series PLC.

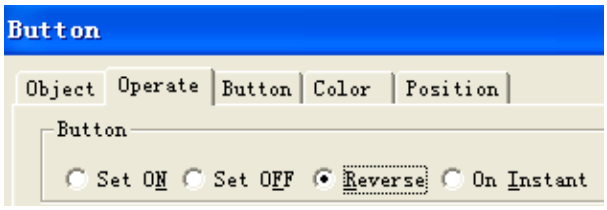


1. Make a button:

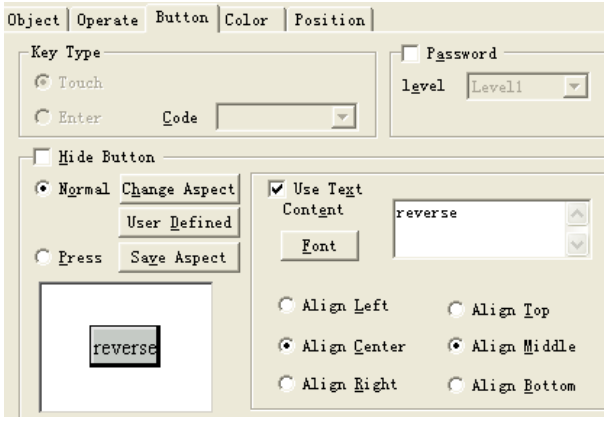
- Click  , put the button on the screen. Change the object to Y0.



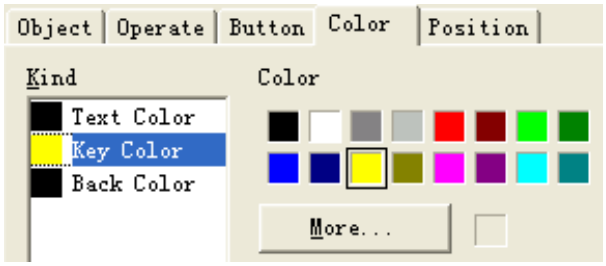
- Select operate tab, change the button operate to reverse.



- Select button tab, change the text to reverse

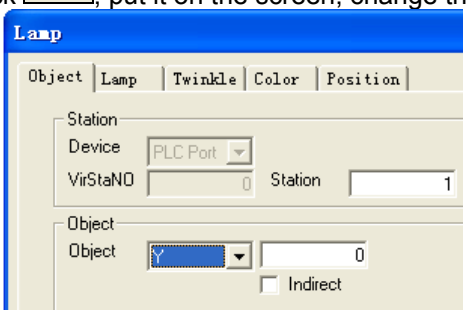


- Select the colour tab, change the button colours



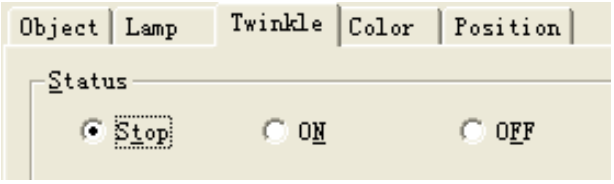
2. Make the lamp

- Click  , put it on the screen, change the object to Y0.



- Select the lamp tab, change the aspect of the lamp.

- Select the twinkle tab, change the lamp state to stop twinkle.



- Colour and position tab are similar to the button.

6-3 Simulate offline

Do not have to download the project into the TH, you can simulate the project in the touchwin software. It can save debug time and easy to edit.

1. Click  to enter simulate offline screen.

2. Click the reverse button to see the ON/OFF switching of the lamp.

Turn off the reverse button

Turn on the reverse button

Thus, the simulate operation is finished.

6-4 Simulate online

By connecting the PLC and PC, it can read the data from PLC, simulate the operate of TH in Touchwin software. Do not have to download the project into TH, you can control the PLC in your PC. Make sure the connection is correct between PLC and PC, the com port setting is right.

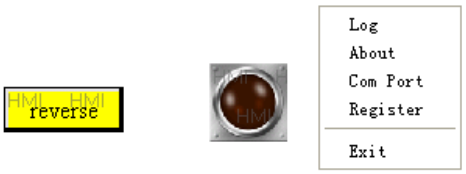
Note:
Only Xinje PLC support the simulate online function with TH.

1. Connect Xinje PLC with the PC via serial port.

2. Click the  to enter *simulate online*. It will show below message:

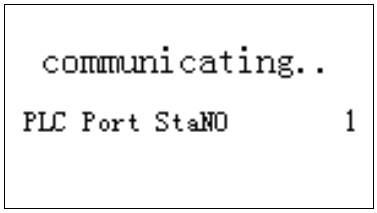
This means that the *simulate online* is not registered, you can only use it for 2 hours. If you want to use it for longer, please contact **Xinje** company to get register number.

3. Click ok to enter simulate online screen. Right click the screen to show below menu:

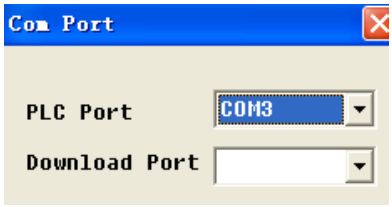


- Log: log on time and history record
- About: the version information of autowin
- Com port: the serial port number of your PC which is connected with PLC.
- Register: register to get user right.
- Exit: exit the autowin.

If showing the following message, it means the connection between PLC and PC is not good, or the serial port number is wrong.



In this example, we use TH PLC port and PC serial com port3, so select PLC port com 3.



1. Click the button to see the lamp is ON/OFF.


Turn off the reverse button turn on the reverse button

Upon clicking the reverse button, the PLC output Y0 will switch ON/OFF at the same time.

6-5 Downloading the project

There are two modes to download the project into the TH:

1. USB port and USB cable
   - USB port downloading:

Connect TH USB-B port and PC with USB cable, power on the TH, click  to download the project.

2. COM1 port and Xinje special cable
   - COM1 port downloading

Change COM1 to download mode, please refer to chapter 4.3, power on the TH, click  to download the project.

7 Application

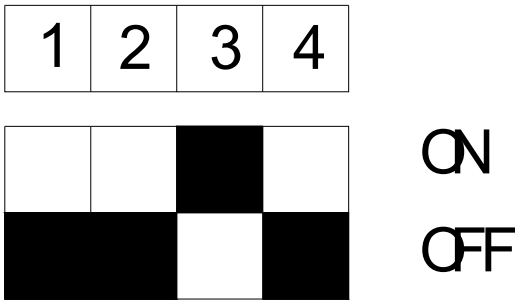
7-1 Adjust the touch screen

The touch area adjustment function can make the component touch more precise.

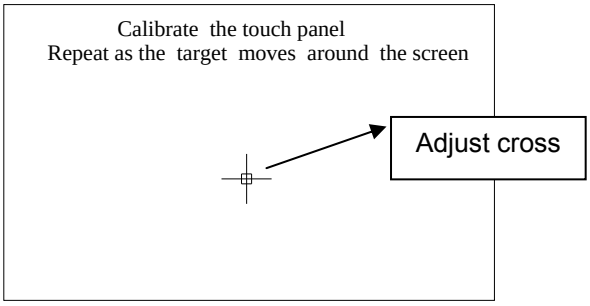
The adjustment steps:

Step 1:
Turn on the DIP switch 3, then power on the TH again, it will show the following screen:

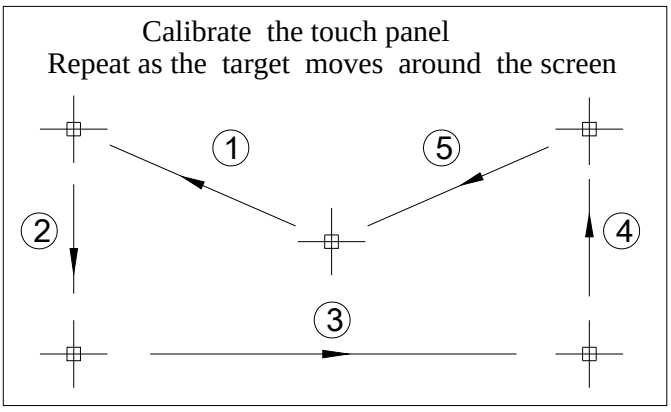
Turn on switch 3



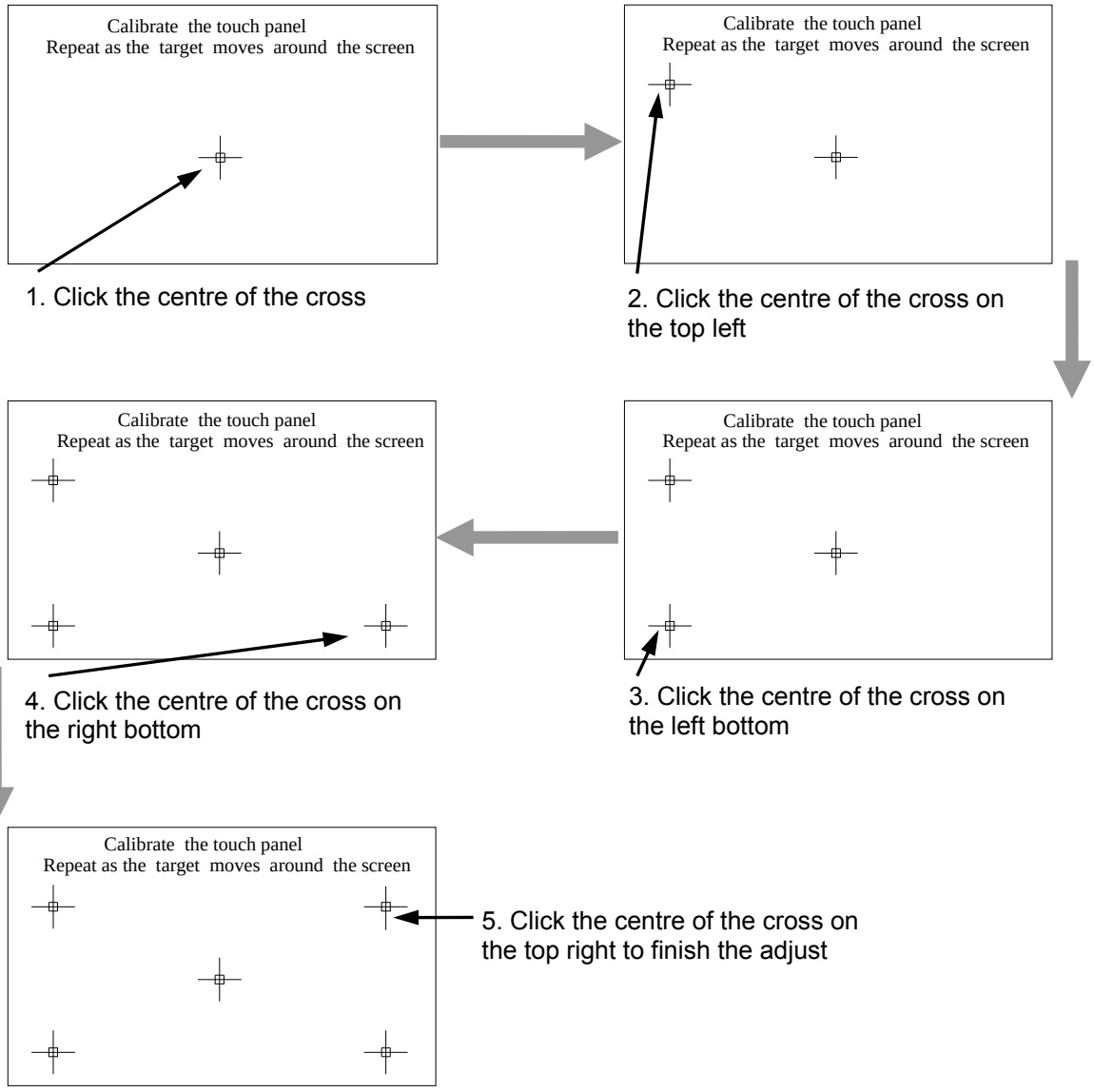
Click the centre of the adjust cross



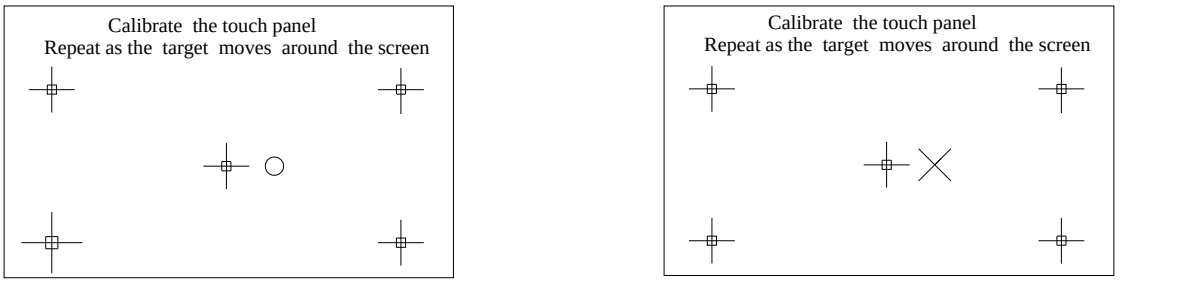
Step2:
After clicking the cross centre, the adjust cross will jump to the second position. Keep on click the cross until the cross jump to the last position 5.



Step 3:
Please see the detailed motion:



Step 4:
When finished the adjustment, the result is as the following;



Adjustment process is end.

Adjustment process is failed. Please do again.

Note:

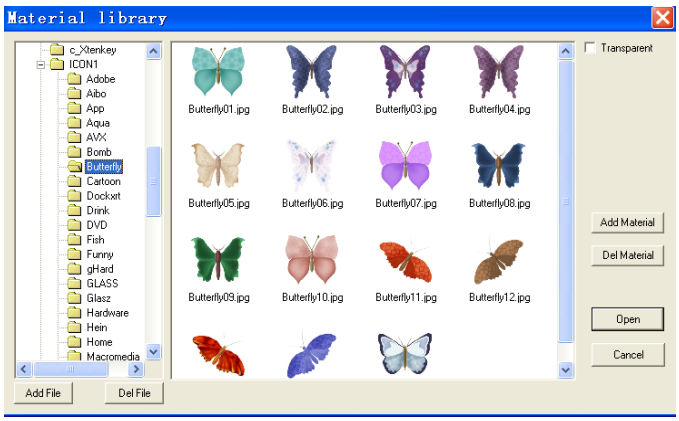
If the adjustment process is end, please turn off the power of TH, then turn off the DIP switch 3, then turn on the power again. Now you can use TH normally.

7-2 Photo application

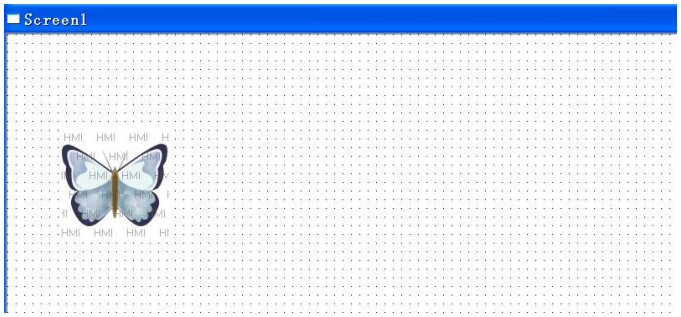
TH series LCD are 65536 true colours, it can make your photo display more vividly.
This example will make the photo moving in parallel.

Step1:
Select the photo

Click  button in the tool bar to open the material library:

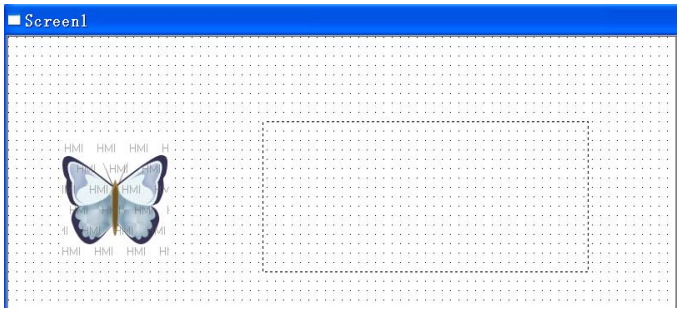


Select the photo you want, and click “open”. The photo will be added on the screen.



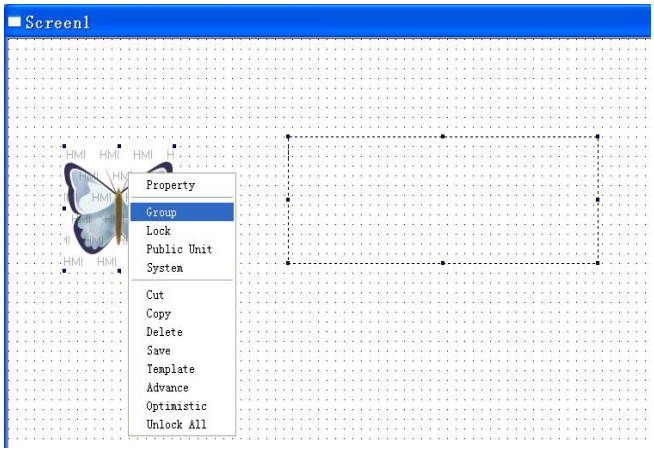
Step2:
Design the motion track

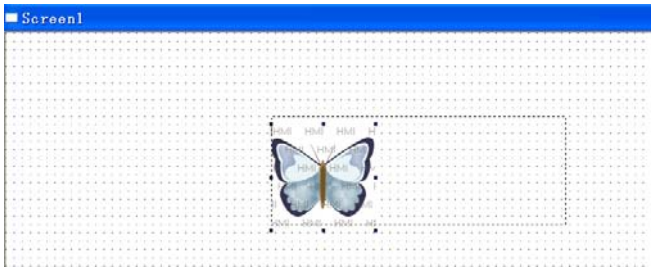
Click the  button in the tool bar, drag your mouse to draw the motion track, double click the mouse to finish the drawing. Please see the drawing:



Step3:
Combine the photo with the motion track

Drag your mouse to select the photo and the motion track, then right click the mouse, select “group”.



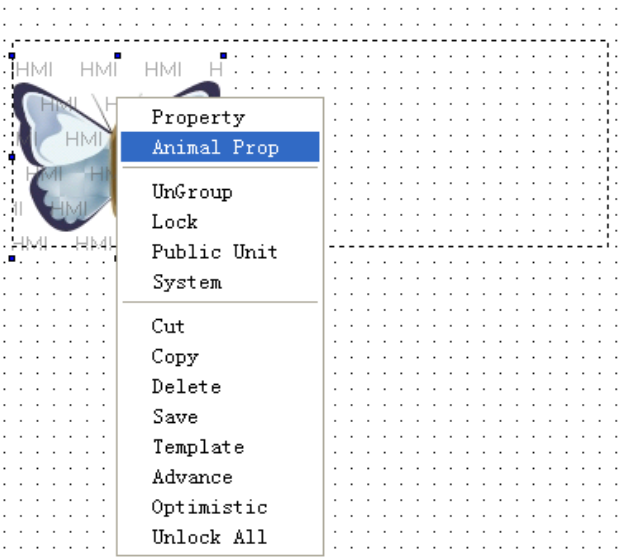


Step4:
Simulate offline

Click  to simulate offline your project. You can see the photo motion track.

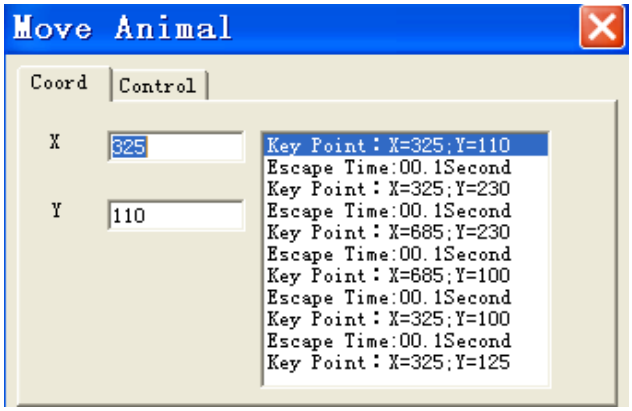
Step5:

- Change the animation property
- Right-click the photo and select “animal prop”



The animation property includes coordinate and control.

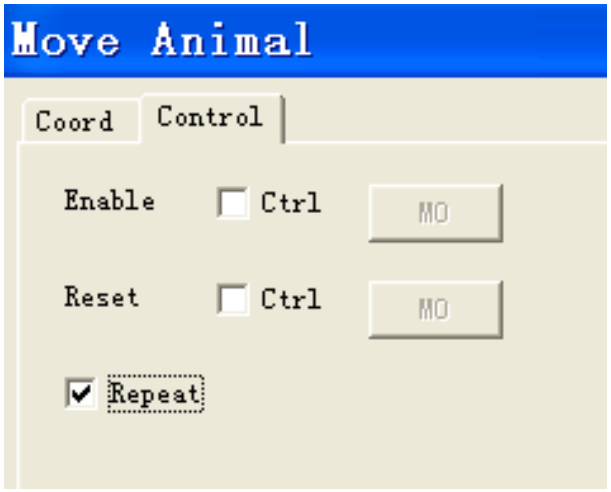
1. Coordinate



- X: the position on X axis
- Y: the position on Y axis
- Escape time: the time that the photo moves from (X1,Y1) to (X2,Y2)
- Key point X,Y: the coordinate of every motion position

You can click the X, Y position and the escape time in the list and modify them.

2. Control



- Enable: control the animation by bit signal. When the rising edge of the signal is coming, the animation will be activated.
- Reset: control the end of the animation by bit signal. When the rising edge of the signal is coming, the animation will end.
- Repeat: repeat the motion of the animation.

7-3 Debug and download

TH series touch screen support debug download function. This function can be used when you are debugging your project in order to save your time.

Compared with normal download function, this function has the following advantages:

1. This function only can be used when debugging the project.
2. The data transfer speed is faster than normal download, save time and cost.

Click  button in the tool bar to debug download the project into your TH.

7-4 Data backup

Data backup includes the following contents:

1. Data collection and export, store the data of TH series HMI into USB device or SD card, produce CSV data base file.
2. Import CSV data, transfer the data of USB device or SD card to TH series HMI.

- About CSV file:

The CSV file is based on Excel, the format is as the following:

Temperature	Pressure	Hydraulic pressure	Date	Time
30	35	40	2009-8-10	12:10:10

Title

Data

Data

Date

Time

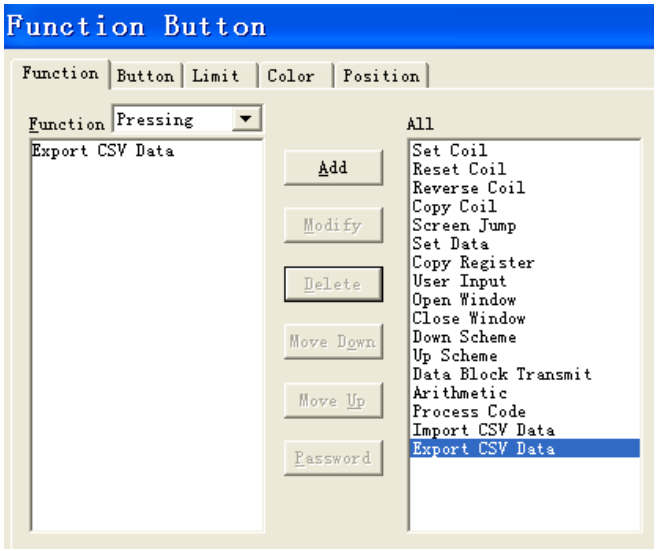
- To build CSV file

Open Microsoft Excel, input the data as the up format, then save as *.CSV* file.

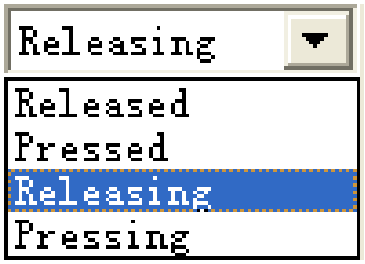
7-4-1 Data export

Export the data from TH to other device.
Step1:

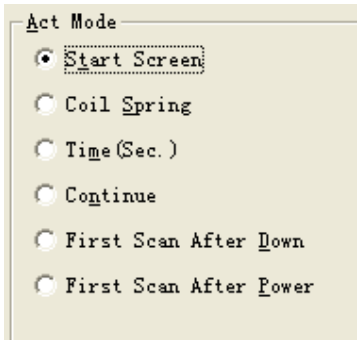
Click function button  or function field  , select “export CSV data” and add it.



When using function button, please select “pressing” or “releasing” as the trigger condition.

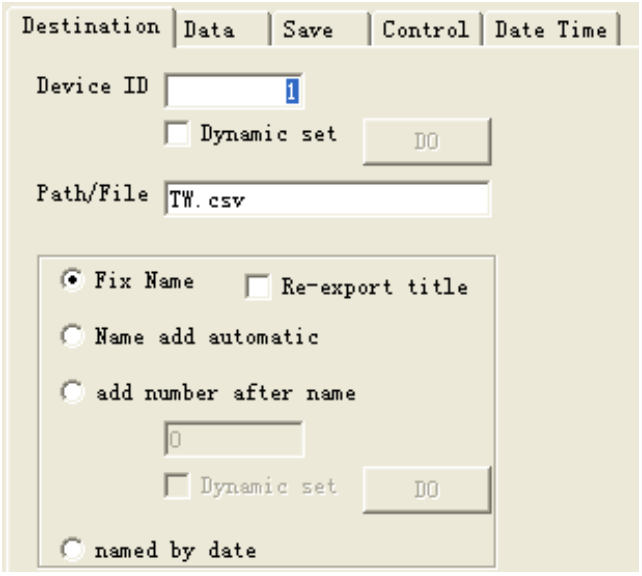


When using function field, please select the trigger condition as you need.



Step 2:
Double click “export CSV data”, it shows the following window:
This window includes destination, import, save and date time tab.

1. Destination tab



Device ID: set the object device number which you want to export data, “dynamic set” can connect the D register with the device ID.

Path/File: the name of the CSV file

Fix name: the data collected each time will be saved in the same file.

Re-export title: export the title when collect the data each time
Please see the following examples.

Length	Width	Height	Qty
20	30	40	12
32	41	37	13

Fix name file

Length	Width	Height	Qty
20	30	40	12
Length	Width	Height	Qty
32	41	37	13

Fix name and re-export title file

Name add automatic: It exports a new file when collect the data each time. The new file name will increase automatically. For example, file 1 is TH001.csv, file 2 will be TH002.csv.

Please see the following picture:

Add number after name: add the number after the file name. For example, input 001 

, the file name is TH001.csv.

Dynamic set: set the number in D register. For example, If D0=20, the file name is TH020, D0=23, the file name is TH023.

When “add number after name” and “dynamic set” are both selected, “dynamic set” has priority.

Named by date: the file name is added the date. When exporting the data several times at the same day, it will add the data title in the file automatically.

For example:

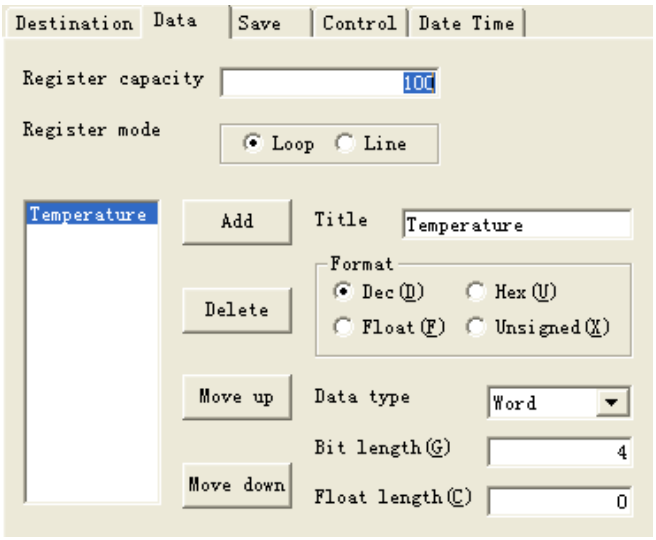
Length	Width	Height	Qty
20	30	40	12

Export the data the first time on 8/18/2009

Length	Width	Height	Qty
20	30	40	12
Length	Width	Height	Qty
32	41	37	13

Export the data the second time on 8/18/2009

2. Data tab

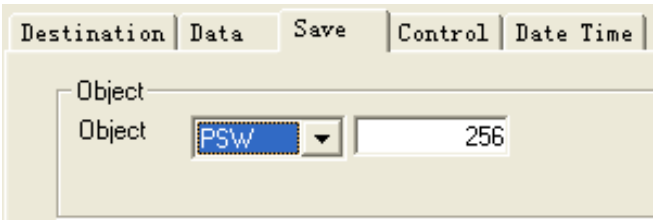


Register capacity: import register quantity

Register mode:
Loop: use with “real trend map”, “history data map”, “time trend control”, “sample save”…
Line: export the data in the registers to CSV file. It is used to the recipe and data arrays.

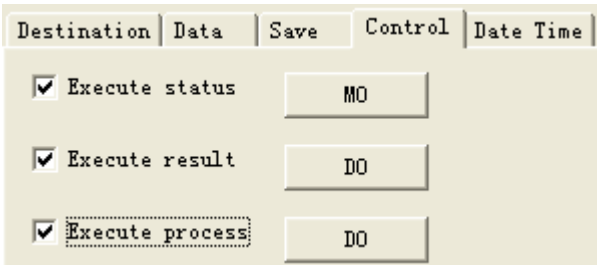
Add, delete, move up, move down:
Add the data titles, select the export data format and type.

3. Save tab



Save the data in touch screen internal registers.

4. Control tab



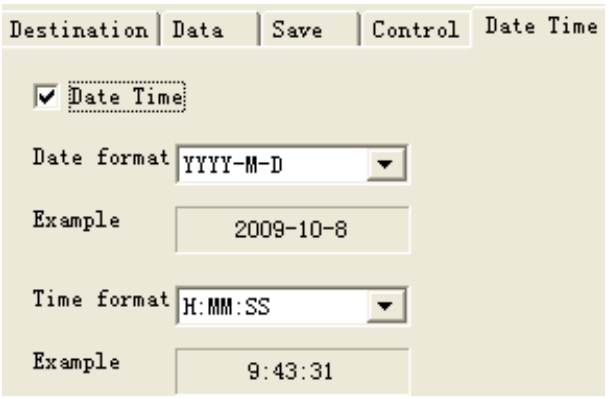
This tab is used to control the export.

Execute status: To show if it is in exporting state via bit state. If the bit is ON, TH is exporting data.
Execute result: Show the export result state via the register state.

- export failed
- export target device does not exist
- the memory is not enough
- file path error
- reading / writing file failed

Execute process: Show the exporting process via register, 100 means the exporting process is succeed.

5. Date time



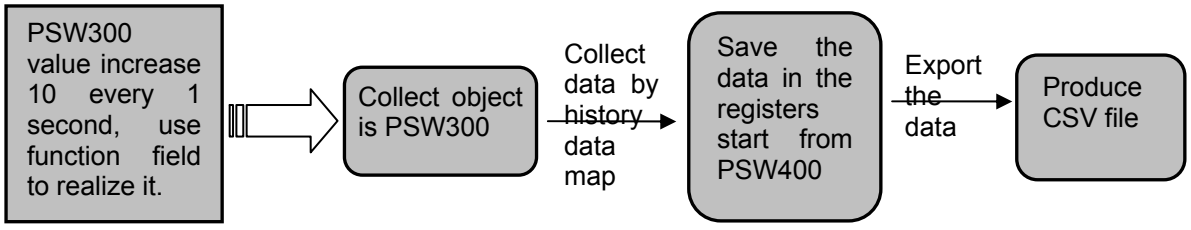
To add the date in the CSV file.

Please select the data format and time format in the pull down menu.

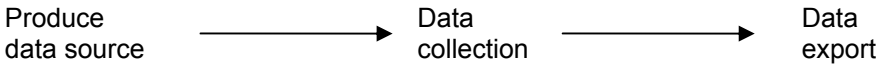
EXAMPLE:
This chapter will introduce the data export examples in loop and line mode.
<A> Data export in loop mode

Purpose: collect the data via history data map, export the data to moveable device and save as CSV file.

Please see the whole process:



Process:

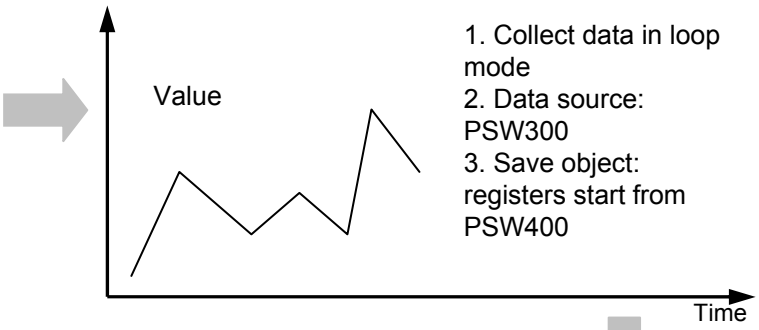


Function filed

1. Data change every 1 second
   PSW300=PSW300+10

2. PSW data change process:
   1 second：PSW300=0；
   2 second: PSW300=10；
   3 second：PSW300=20；
   4 second：PSW300=30；

History data map



1. Collect data in loop mode
2. Data source: PSW300
3. Save object: registers start from PSW400

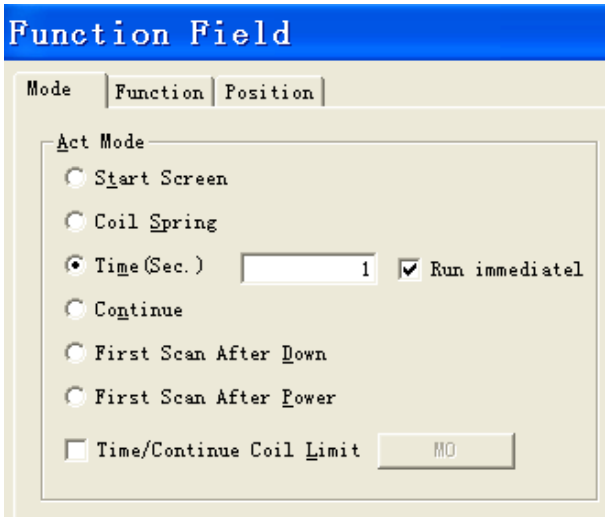
Data export to the registers start from PSW400

Produce CSV format file

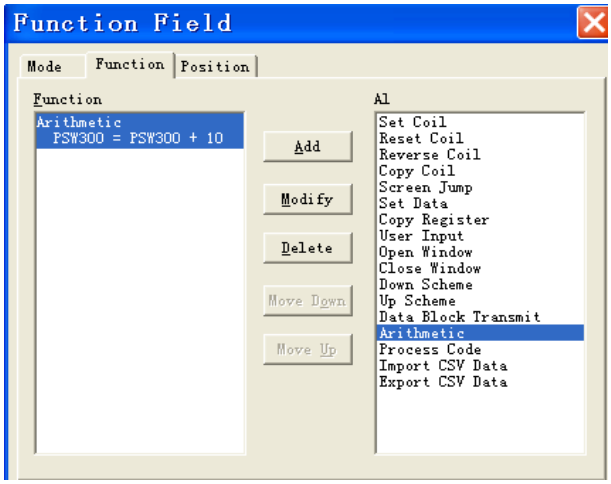
Next, we will introduce the each process:

1. Produce the data source: PSW300=PSW300+10 every 1 second:

Open the Touchwin software, click 



→ Select time: 1 second

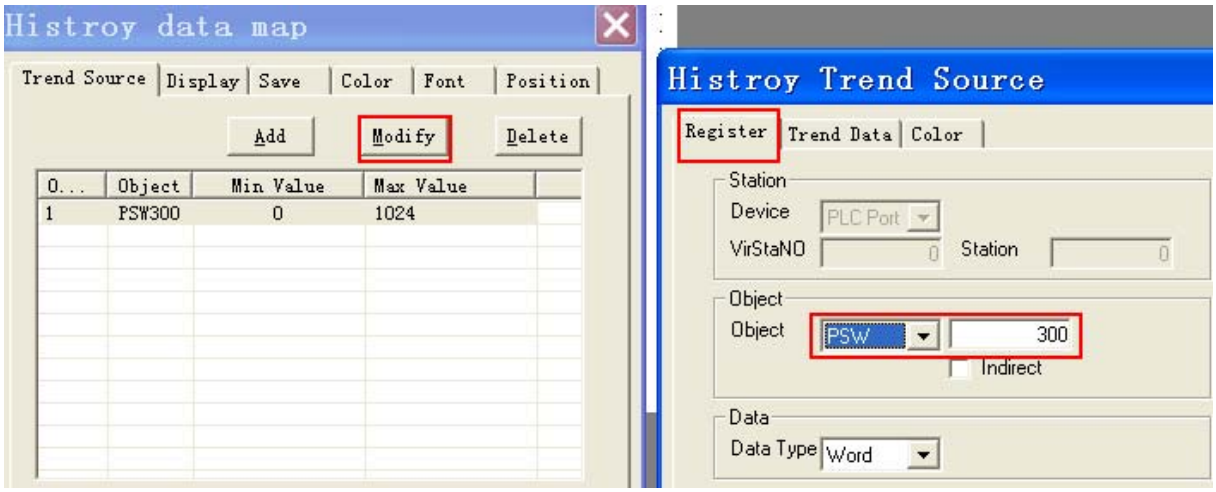


Add the arithmetic
PSW300=PSW300+10

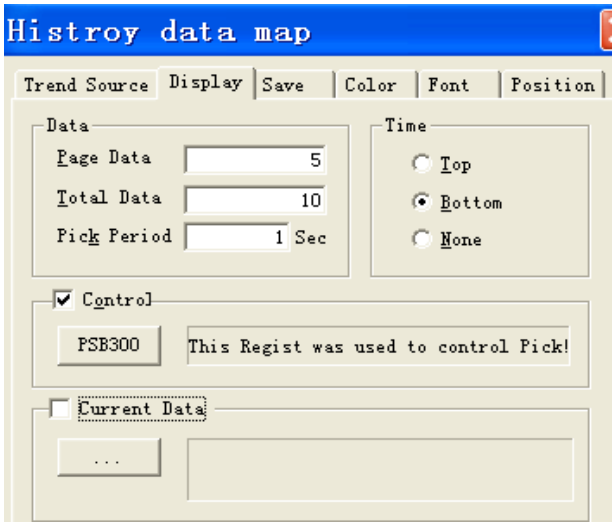
Note:
Please see the TP touch screen manual for this content.

2. Data collect: use history data map to collect the data every 1 second, use PSB300 to control if it is need to collect.

Click  ,add it in the screen, change the “trend source” tab.



Next, change the display tab: page data is 5, control is PSB300.



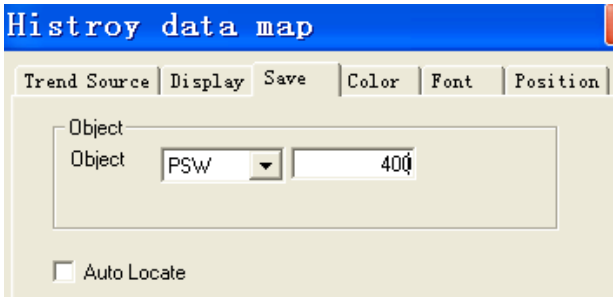
Page data:5, show 5 numbers each screen

Total data:10, it can collect 2 screens data

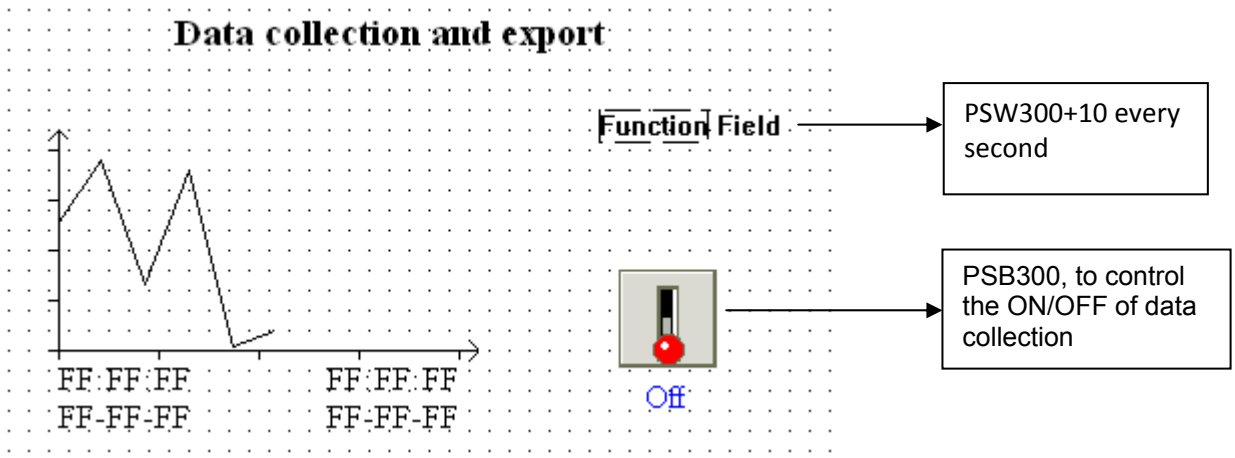
Pick period: 1 second, collect the data every 1 second.

Control:PSB300, control the ON/OFF of the data collection by PSB300

Change the save tab: save the data in the registers start from PSW400.

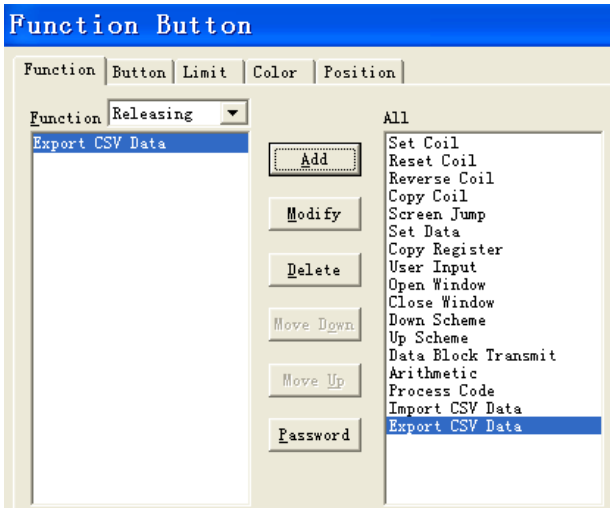


Add a button, to control the stop and start of the collection process. The button is related to PSB300.

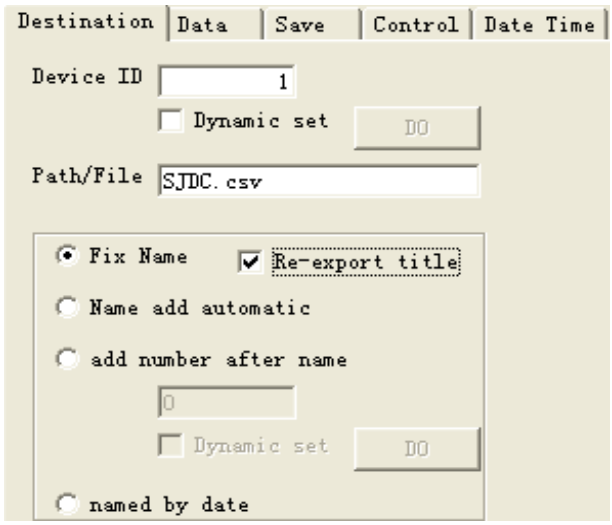


3. Data export

Realize the data export function by function button. Click  in the tool bar. Add it on the screen, set the button as the following:



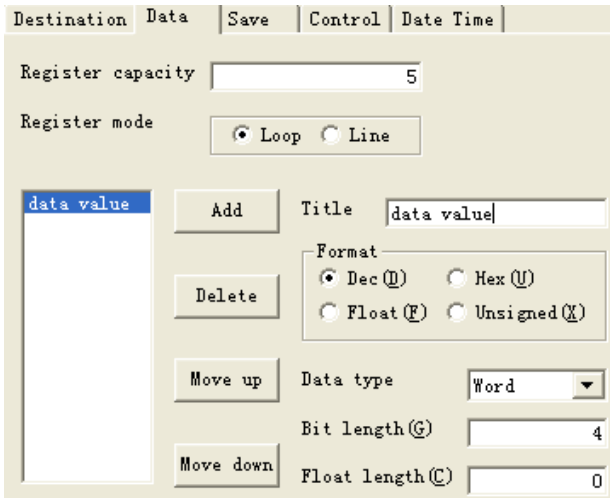
Double click the “export CSV file” to continue the setting:



Device ID: 1, there is one U disk device.

Path/File: name the file to SJDC.csv, re-export the title.

Data tab

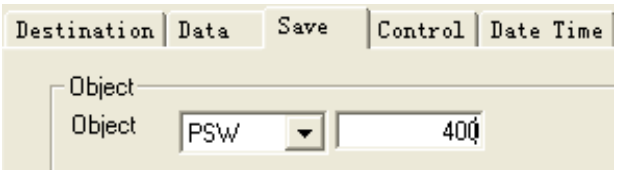


Register capacity: 10

Register mode: loop, to correspond to the history trend map

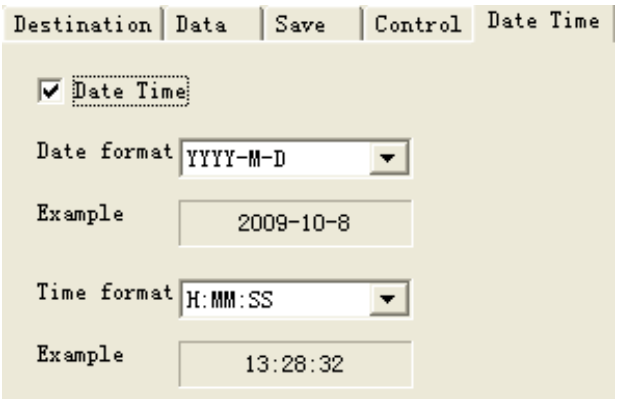
Format: decimal

Save tab



Save the data in PSW400

Date time tab

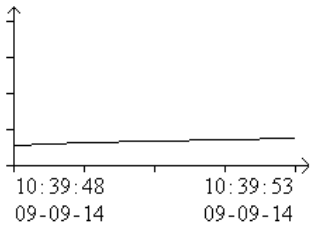


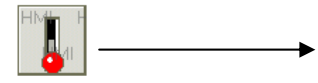
Date time: export the date and time to the .csv file.

Now the data export has been done.

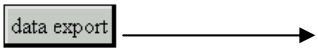
Via the  simulate offline, you can monitor the data change and operate the button.

Data export example





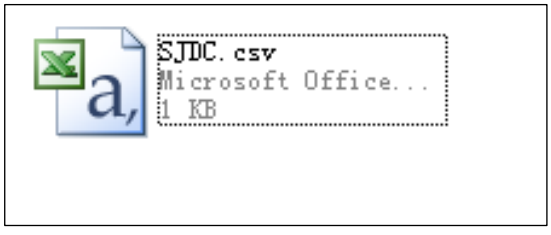
Turn on the button to start the history data map



Click the button to export the data into U disk

The operation steps:
Step 1: Make sure the TH is connected to object device.
Step 2: Click ON/OFF button to start the data collection in history data map
Step 3: Click the data export button, the U disk device LED starts to flickering, it means the CSV file is being produced, if the LED ends flicker, the export process has been finished.

The CSV data is shown as below:

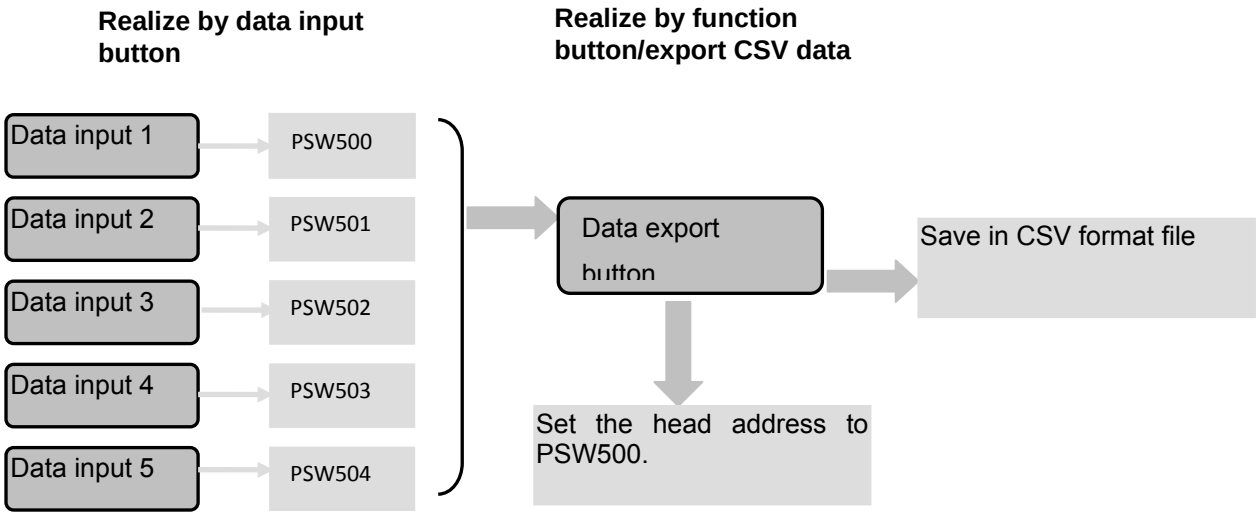


1	data value	date	time
2	60	2009-9-14	10:12:
3	70	2009-9-14	10:12:
4	80	2009-9-14	10:12:
5	90	2009-9-14	10:12:
6	100	2009-9-14	10:12:

<B> Data export in line mode

In industry system, HMI is seemed as control and monitor terminal. It can be used to set all kinds of parameters directly. In order to check the history data, use data export function to complete the data management.

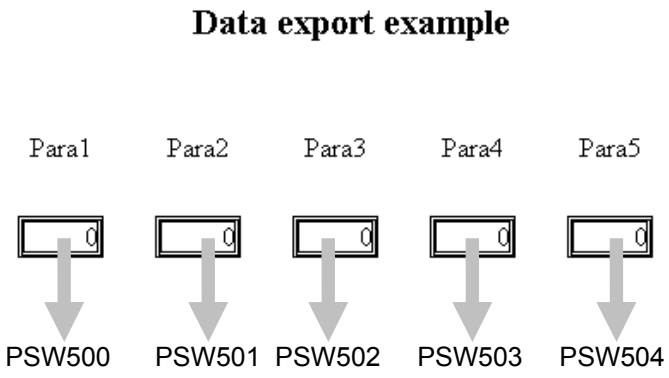
Example:
Using data export function to complete the parameters recording.
Purpose: realize parameters setting by data input button, and data export by data export button.
The process is shown as below:



Next, we will introduce how to make the project in two parts:

Part 1: Input the parameters

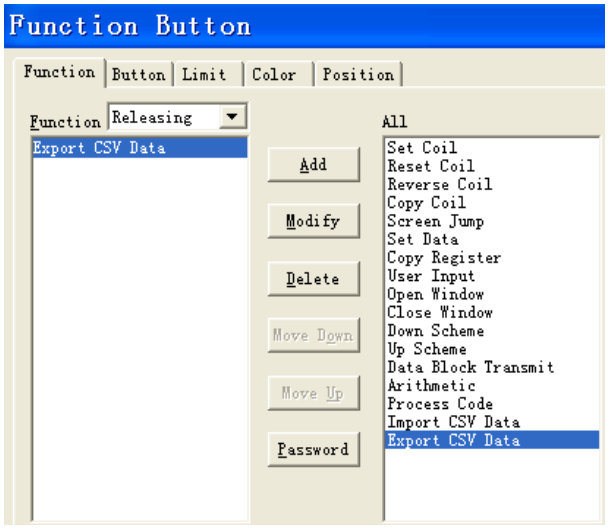
Put the data input button  on the screen, change the address as the following:



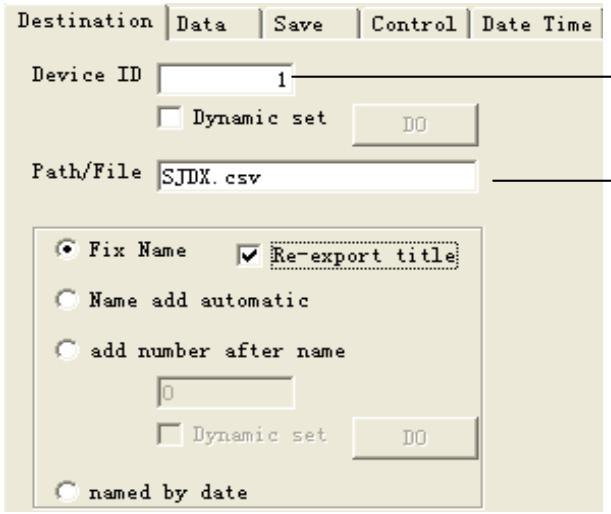
Note:
About the data input button, please refer to TP series HMI manual.

Part 2: about data export button

Click  function button, then set as the following:



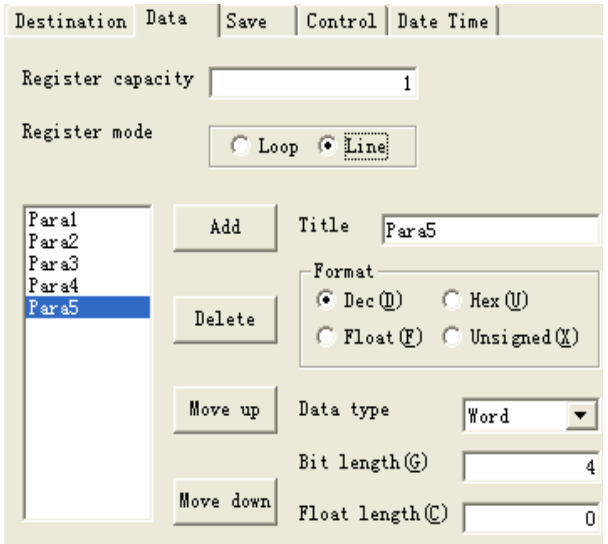
Double click the export CSV data to change the parameters:
Destination tab:



Device ID: 1 is the U disk number

Change the file name to SJDX.csv, export the data to this file.

Data tab:

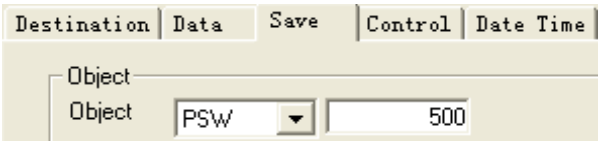


Each group of parameters includes 5 values, export 1 group parameter each time, so the register capacity is 1.

Register mode is line.

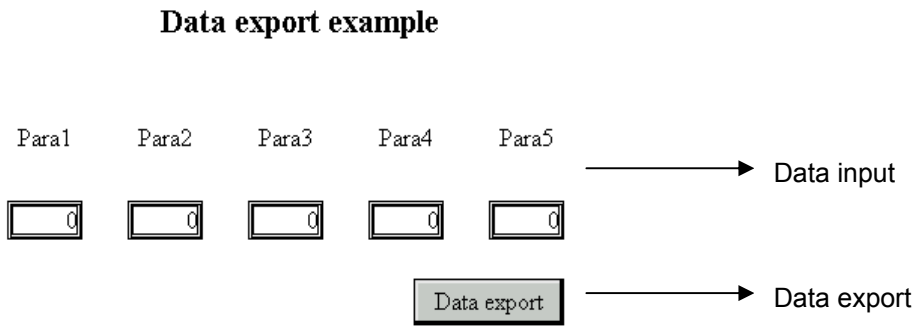
Add the title, make it correspond to the parameters.

Save tab:

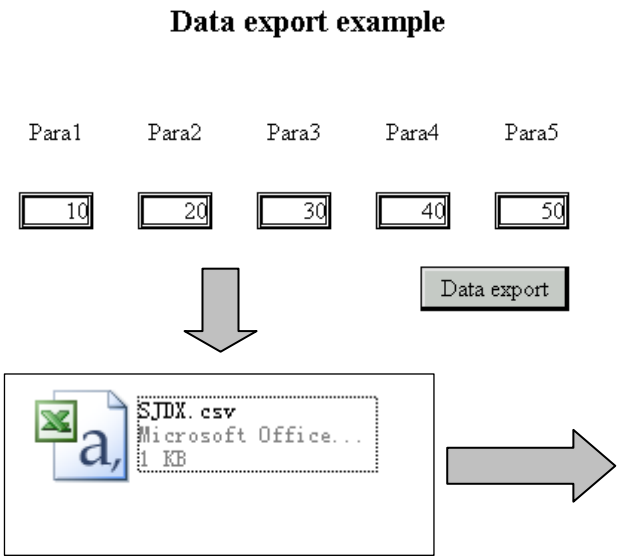


Set the export object to PSW500, make it the same as the data input button address.

Example:
It has not referred to date and time, so do not have to set them.
The screen has been done, please see the following picture:



Run the project, and you will see the following result:



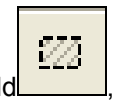
Excel file: SJDX.csv

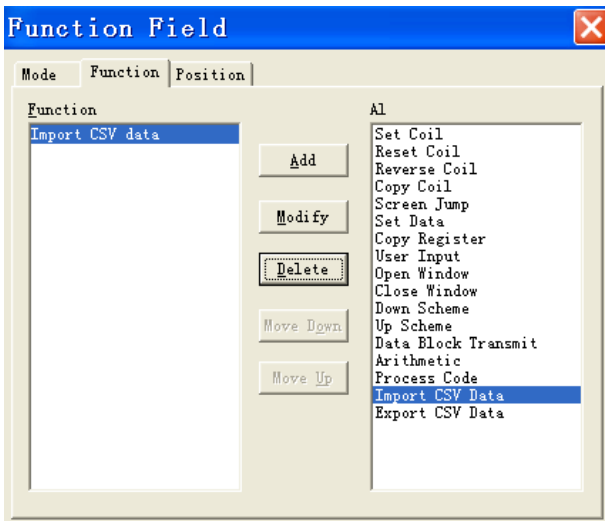
1	Para1	Para2	Para3	Para4	Para5
2	10	20	30	40	
3	Para1	Para2	Para3	Para4	Para5
4	25	35	45	55	
5	Para1	Para2	Para3	Para4	Para5
6	34	56	33	76	

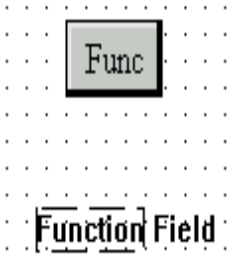
7-4-2 Import the C SV data

The purpose is to import the data from the SD card or U disk to TH register.

Step1:

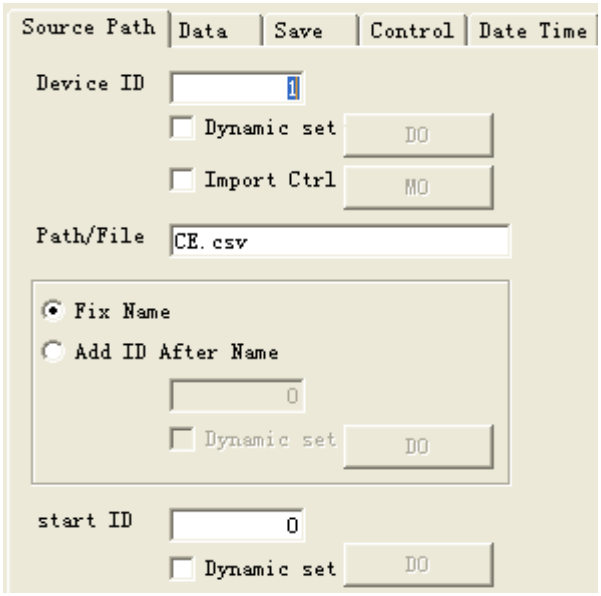
Use function button  or function field  , select import CSV data function.





Step2:
Double click import CSV data, change the parameters as the following:

1. Source path tab



Device ID: the device number of import device

Dynamic set: set the device ID in D register.
Import control: control the import process by M coil, when M is ON, the import process starts.

Path/File: the CSV file name

Fix name: the import data are from the same source file
Add ID after name: set the import file name by the input value or the value in D register

Please see the following picture: the import data when select start ID to 5 and 10.

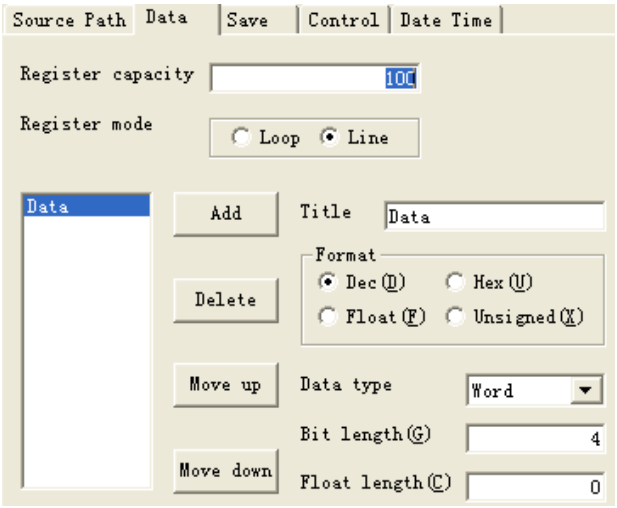
	A	B	C	D	E	F	G
1	40	8	10	15	2009-8-10	12:10:12	
2	40	10	10	18	2009-8-10	13:10:12	
3	40	15	10	30	2009-8-10	14:10:12	
4	45	8	6	25	2009-8-10	15:10:12	
5	45	10	8	20	2009-8-10	16:10:12	
6	50	10	8	20	2009-8-10	17:10:12	
7	55	12	10	15	2009-8-10	18:10:12	
8	55	14	10	30	2009-8-10	19:10:12	
9	55	20	8	20	2009-8-10	20:10:12	
10	60	12	10	25	2009-8-10	21:10:12	
11	60	20	8	35	2009-8-10	22:10:12	
12	65	10	10	20	2009-8-10	23:10:12	
13	65	12	5	15	2009-8-11	8:10:12	
14	65	18	15	15	2009-8-11	9:10:12	
15	65	20	8	30	2009-8-11	10:10:12	
16	70	8	8	18	2009-8-11	11:10:12	
17	70	16	10	18	2009-8-11	12:10:12	
18							
19							

When start ID is 5, import these data.

When start ID is 10, import these data.

When the start ID is 0 or 1, the import data is the first group.

2. Data tab

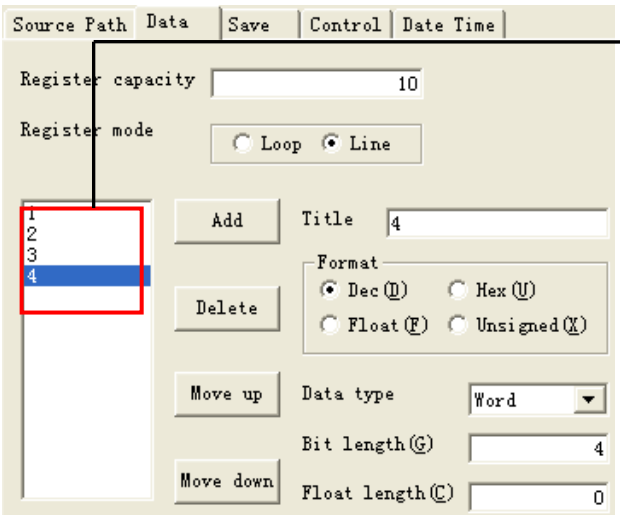


Register capacity: the import data group quantity

Register mode:
Loop: the data will be stored in the object registers in loop mode, so the original data will be covered.
Line: the data import to the object register one after another.

Add, delete, move up, move down, title….:
Add the data title in the list, and select the data format, type, bit length,etc.

Please note the title list items must be the same as the CSV file items.

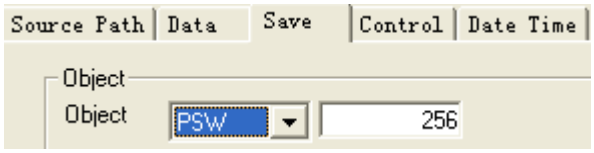


There are 4 items in the title list.

There are four items in the CSV file.

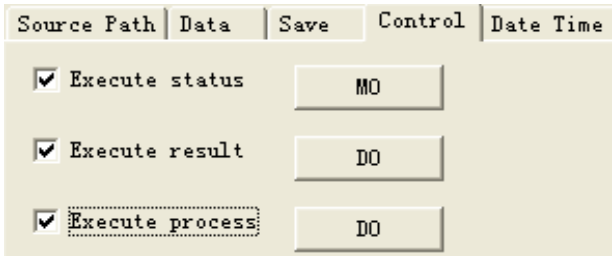
	A	B	C	D
1	40	8	10	15
2	40	10	10	18
3	40	15	10	30
4	45	8	6	25
5	45	10	8	20
6	50	10	8	20
7	55	12	10	15
8	55	14	10	30
9	55	20	8	20
10	60	12	10	25

3. Save tab:



The import registers address.

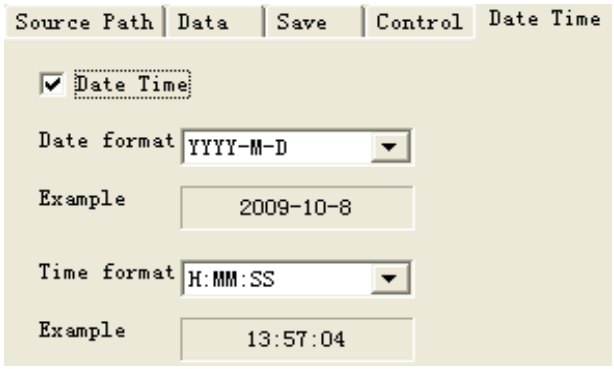
4. Control tab:



Execute status: to show if it is in importing state via bit state. If the bit is ON, TH is importing data.
Execute result: show the import result state via the register state.
0- import failed
0- import target device does not exist
1- the memory is not enough
2- file path error
3- reading / writing file failed

Execute process: show the importing process via register, 100 means the importing process is succeed.

5. Date time tab



Add the date and time in the CSV file.
Select the date and time format via the pull down menu.

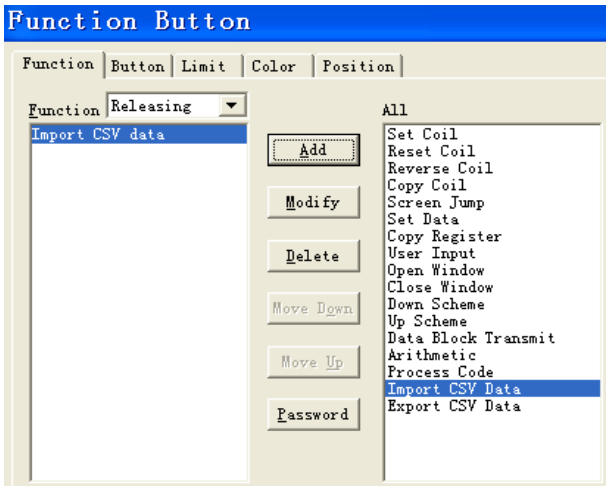
Example:
Purpose: import the data from object device to TH touch screen, select the import data group by input the start ID.

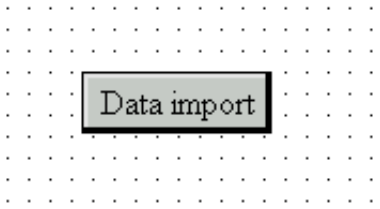
The CSV file in the SD card is SJDR.csv.

1	40	8	10	15	2009-8-10	12:10:10
2	40	10	10	18	2009-8-10	13:10:10
3	40	15	10	30	2009-8-10	14:10:10
4	45	8	6	25	2009-8-10	15:10:10
5	45	10	8	20	2009-8-10	16:10:10
6	50	10	8	20	2009-8-10	17:10:10
7	55	12	10	15	2009-8-10	18:10:10
8	55	14	10	30	2009-8-10	19:10:10
9	55	20	8	20	2009-8-10	20:10:10
10	60	12	10	25	2009-8-10	21:10:10
11	60	20	8	35	2009-8-10	22:10:10
12	65	10	10	20	2009-8-10	23:10:10
13	65	12	5	15	2009-8-10	0:10:10
14	65	18	15	15	2009-8-10	10:10:10
15	65	20	8	30	2009-8-10	2:10:10
16	70	8	8	18	2009-8-10	3:10:10
17	70	16	10	18	2009-8-10	4:10:10
18						

In TH touch screen, the data store address starts from PSW400.
The realize steps:

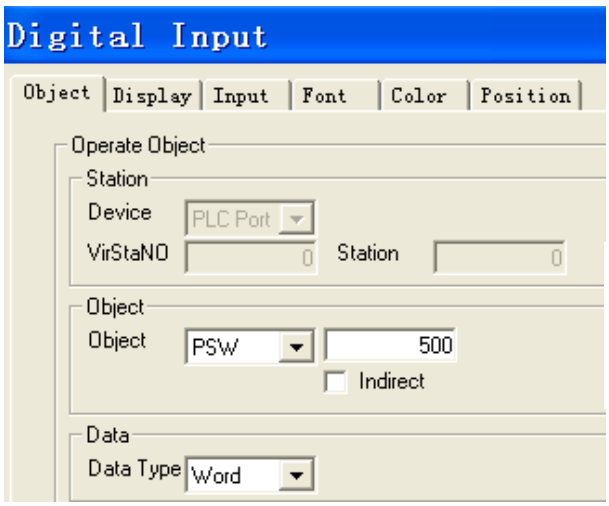
Step1: use function button  or function field  . Set as the following:





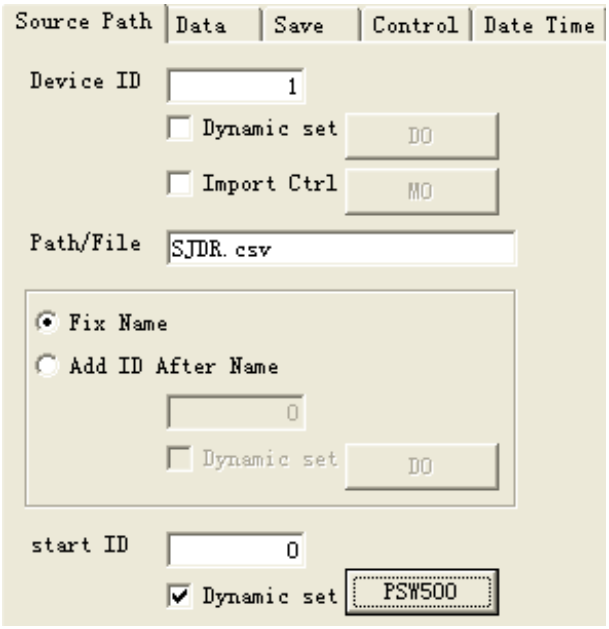
Step2: build the import data group selection button.

Put a data input button on the screen-----  , change the parameters:



Change the object to PSW500 and be constant with the following import data dynamic appoint address.

Step3: double click “import CSV data”.



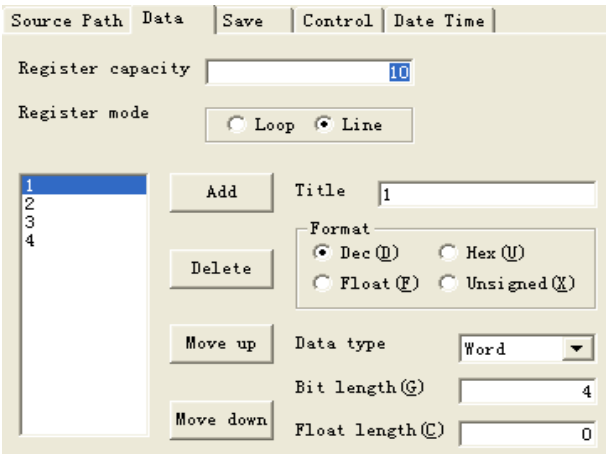
Device ID: 1

Path/File: SJDR.csv, must be the same as the object import file.

Fix name means importing from the same file.

Start ID: dynamic appoint PSW500.

Import tab:

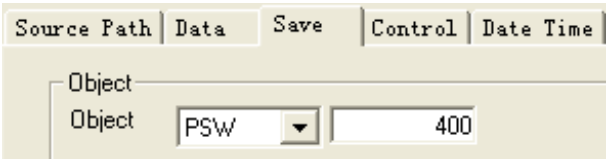


Register capacity: 10, it means 10 groups of data

Register mode: line

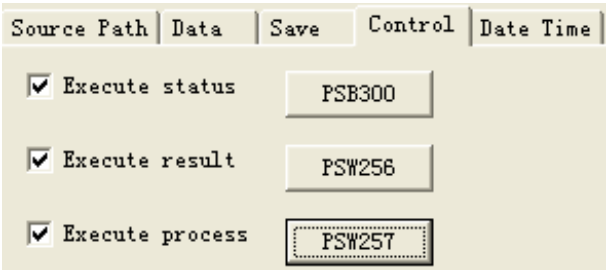
Add the title: there are 4 rows of data.

Save tab:



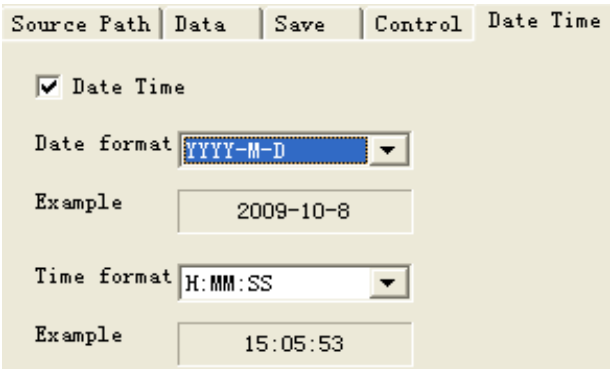
Object: save the data of mobile device into TH register starts from PSW400.

Control tab:

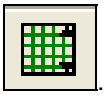


Execute status: PSB300 to show the importing state
Execute result: PSW256 to show the importing result
Execute process: PSW257 to show the importing process

Date/time tab:



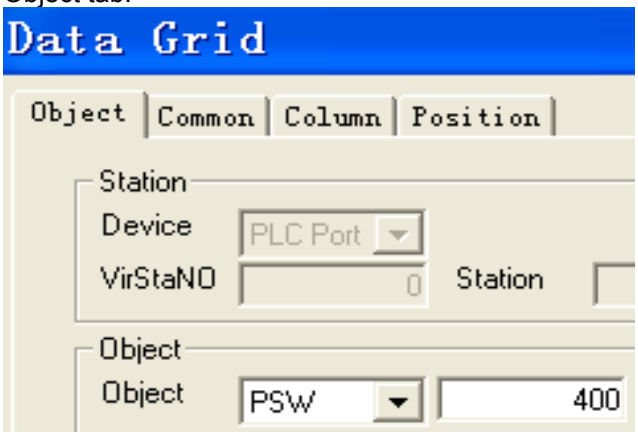
Because the import data has time and date, select this item.

Step4: show the import data start from PSW400 in “data table”  .

NO	Name	Length	Width	Height	Qty	Date time
000	group1	000	000	000	000	16:18:35
000	group2	000	000	000	000	16:18:35
000	group3	000	000	000	000	16:18:35
000	group4	000	000	000	000	16:18:35
000	group5	000	000	000	000	16:18:35
000	group6	000	000	000	000	16:18:35
000	group7	000	000	000	000	16:18:35
000	group8	000	000	000	000	16:18:35
000	group9	000	000	000	000	16:18:35
000	group10	000	000	000	000	16:18:35

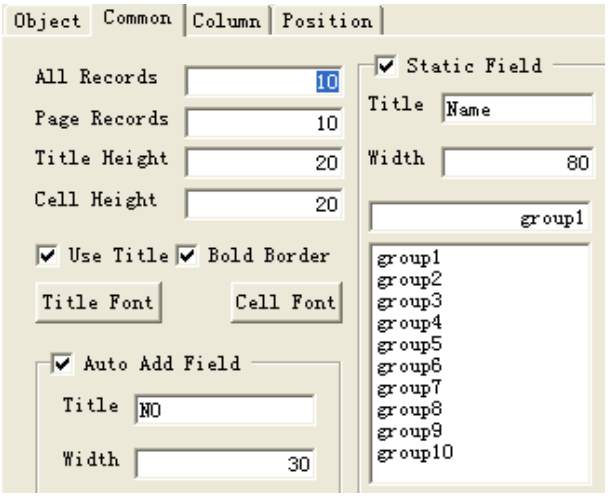
Change the parameters:

Object tab:



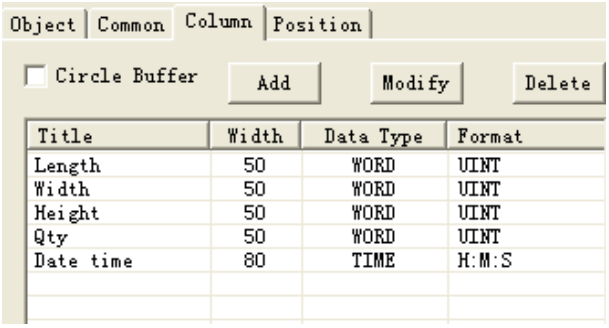
The object is PSW400, the same to the data import address.

Common tab:



Set the all records, page records as the left window.

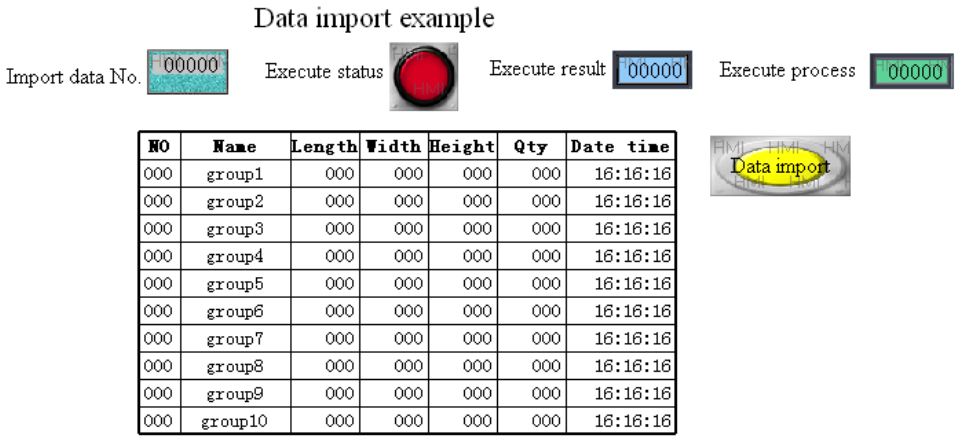
Column tab:



Add the text as the left window.

Set the date time item to time format.

The data table is finished, please see the following screen:



Step5:
Connect the mobile device and TH, click the import data button, monitor the data in “data table”.

NO	Name	Length	Width	Height	Qty	Date time
0	Group 1	0	8	10	15	2009-08-10 12 : 10 : 10
1	Group 2	40	10	10	18	2009-08-10 13 : 10 : 10
2	Group 3	40	15	10	30	2009-08-10 14 : 10 : 10
3	Group 4	45	8	6	25	2009-08-10 15 : 10 : 10
4	Group 5	45	10	8	20	2009-08-10 16 : 10 : 10
5	Group 6	50	10	8	20	2009-08-10 17 : 10 : 10
6	Group 7	55	12	10	15	2009-08-10 18 : 10 : 10
7	Group 8	55	14	10	30	2009-08-10 19 : 10 : 10

When the import data No = 0 or 1, the data table is shown as up.

NO	Name	Length	Width	Height	Qty	Date time
0	Group 1	60	12	10	25	2009-08-10 21 : 10 : 10
1	Group 2	60	20	8	35	2009-08-10 22 : 10 : 10
2	Group 3	65	10	10	20	2009-08-10 23 : 10 : 10
3	Group 4	65	12	5	15	2009-08-10 00 : 10 : 10
4	Group 5	65	18	15	15	2009-08-10 10 : 10 : 10
5	Group 6	65	20	8	30	2009-08-10 00 : 10 : 10
6	Group 7	70	8	8	18	2009-08-10 03 : 10 : 10
7	Group 8	70	16	10	18	2009-08-10 04 : 10 : 10

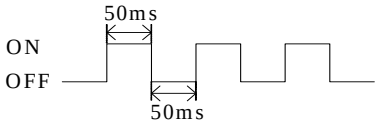
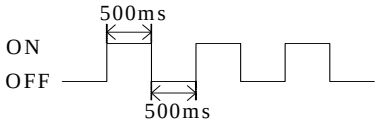
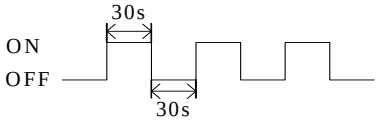
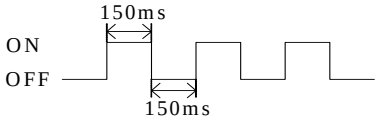
When the import data No = 10, the data table is shown as up.

8 TH series interior objects

This chapter will introduce the interior objects of the TH.
The interior objects contain PSB(bit register), PSW(word register), PFW(word register).

Note:
1. Only when the advanced function is opened, the special interior objects can be used.
2. PSB0~PSB255, PSW0~PSW255, PFW0~PFW255 are occupied by system.

Bit register PSB

Register	Function	Remark
PSB0	Normally closed coil	
PSB1	Normally open coil	
PSB2	Turn on during the first scan period	
PSB3	100ms pulse signal	
PSB4	1s pulse signal	
PSB5	1minute pulse signal	
PSB6	300ms pulse signal	
PSB15	Communication failure	0: successful 1: failed
PSB16	Succeed to scan the screen once	
PSB30	First scan after download	
PSB31	First scan after power on	
PSB39	Turn off the touch screen	
PSB60	Level 1 password flag	(1: password is opened, 0: password is closed)
PSB61	Level 2 password flag	(1: password is opened, 0: password is closed)
PSB62	Level 3 password flag	(1: password is opened, 0: password is closed)
PSB63	Level 4 password flag	(1: password is opened, 0: password is closed)
PSB64	Level 5 password flag	(1: password is opened, 0: password is closed)
PSB65	Level 6 password flag	(1: password is opened, 0: password is closed)
PSB66	Level 7 password flag	(1: password is opened, 0: password is closed)
PSB67	Level 8 password flag	(1: password is opened, 0: password is closed)
PSB68	Level 9 password flag	(1: password is opened, 0: password is closed)

Word register PSW

Register	Function	Remark
PSW0	Start screen No.	
PSW1	Current screen No.	
PSW20	Screen width	(read only)
PSW21	Screen height	(read only)
PSW26	PSB amounts	(read only)
PSW27	PSW amounts	(read only)
PSW28	PFW amounts	Occupy PSW28、PSW29 (read only)
PSW30	Year	(Hex) (read only)
PSW31	Month	(Hex) (read only)
PSW32	Day	(Hex) (read only)
PSW33	Hour	(Hex) (read only)
PSW34	Minute	(Hex) (read only)
PSW35	Second	(Hex) (read only)
PSW36	Week	(Hex) (read only)
PSW40	Recipe index	
PSW54	The device quantity	
PSW60	COM1 communicate successful time	
PSW61	COM1 communicate failure time	
PSW62	COM1 communicate overtime time	
PSW63	COM1 communicate data error time	
PSW64	COM1 device version	
PSW65	COM1 device type	
PSW70	COM2 communicate successful time	
PSW71	COM2 communicate failure time	
PSW72	COM2 communicate overtime time	
PSW73	COM2 communicate data error time	
PSW74	COM2 device version	
PSW75	COM2 device type	

Word register PFW

Register	Function	Remark
PFW1	The screen No. after power on	
PFW2	Background colour setting	
PFW10	Screen saver start time	
PFW11	The screen number of screen saver	
PFW20	COM1 baud rate	4800、9600、19200、38400、115200、187500
PFW21	COM1 data bit	7、8
PFW22	COM1 stop bit	0-1 bit, 1-1.5 bits, 2-2 bits
PFW23	COM1 CRC	0-None, 1-Odd, 2-Even
PFW24	COM1 station NO.	
PFW25	COM2 send delay	Unit : ms
PFW30	COM2 baud rate	4800、9600、19200、38400、115200、187500
PFW31	COM2 data bit	7、8
PFW32	COM2 stop bit	0-1 bit, 1-1.5 bits, 2-2 bits
PFW33	COM2 CRC	0-None, 1-Odd, 2-Even
PFW34	COM2 station NO.	
PFW35	COM2 send delay	Unit: ms
PFW60	Level 1 password	PFW60、PFW61
PFW62	Level 2 password	PFW62、PFW63
PFW64	Level 3 password	PFW64、PFW65
PFW66	Level 4 password	PFW66、PFW67
PFW68	Level 5 password	PFW68、PFW69
PFW70	Level 6 password	PFW70、PFW71
PFW72	Level 7 password	PFW72、PFW73
PFW74	Level 8 password	PFW74、PFW75
PFW76	Level 9 password	PFW76、PFW77

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